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CONTENTS

	PAGE
Editorial Notes	33
Costa Rica Railway in 1958-59	35
Tasmanian Transport Commission	36
Changed Rôle of the G.C.R. Main Line	36
The U.S.A. Railroad Position	37
Letters to the Editor	38
The Scrap Heap	39
Overseas Railway Affairs	40
Use of Containers for All Merchandise Traffic	42
Restaurant Cars for British Railways	46
Personal	49
New Equipment and Processes	53
News Articles	55
Contracts and Tenders	57
Notes and News	58
Railway Stock Market and Official Notices	60

New Year Honours

OF the few names connected with the railway industry, included in the New Year Honours List, the most prominent is that of Sir George H. Nelson, Chairman of the English Electric Co. Ltd. His award of a Barony is just recognition of the part he plays in the industry. Under his direction the company supplied the first main-line diesel-electric locomotives in the British Railways Modernisation Scheme. Since then it has continued to contribute much to our export trade in obtaining valuable orders abroad. Mr. G. R. H. Nugent, Member of Parliament for Guildford since 1950, who becomes a Baronet, was Joint Parliamentary Secretary, Ministry of Transport & Civil Aviation from 1957 until the last General Election. Mr. L. J. Dunnett, Permanent Secretary to the Ministry of Transport, receives a K.C.B. He is 45, and became the youngest of his rank in Whitehall, when he was appointed to the position last February. Mr. J. R. Farquharson, General Manager, East African Railways & Harbours, who is awarded a K.B.E., first went to Africa in 1925. Since then he has served continuously on various systems in that continent. Not least of Mr. Farquharson's recent worries are the irresponsible demands of his African labour. He has shown great tact and ability in handling this difficult situation. Mr. F. B. Harvey, formerly General Traffic Manager & Deputy Commissioner for Railways, South

Australia, had completed nearly 49 years of continuous railway service when he retired last March. During his career he specialised in various train control methods, which he introduced on several systems in Australia. Appreciation of his work is expressed in the award of an O.B.E. On British Railways no officer and very few men are deemed worthy of inclusion. This is a familiar and disappointing feature of recent Honours Lists. During the past year considerable progress has been made in the modernisation plan. The resultant improvement in services is already being appreciated by traders and the travelling public. It seems a little unjust that the sustained efforts of railwaymen, and the exertions of railway manufacturers should pass almost unnoticed in the Honours List.

Unnecessary Shortage of Coal Wagons

IN view of the drop in goods, and, more particularly, coal traffic, British Railways should have no difficulty in dealing with the smallest traffic carried since grouping in 1923. At the nadir of the economic depression in 1933, they moved 252,000,000 tons of goods. In 1958, they carried 243,000,000 tons, a fall of 3.5 per cent. Between these years coal tonnage dropped 7 per cent from 165,000,000 to 153,000,000. Results for 1959 are likely to show total carryings by British Railways of only 234,000,000 tons of all goods, and of 143,000,000 tons of coal. Because of the fall in coal traffic, the British Transport Commission recently had been scrapping timber wagons due for heavy repairs, and there has been a backlog in lighter repairs. The steel coal wagons are being placed in service, but the pace of scrapping has proved to be too fast. Accordingly, the Commission last month stopped scrapping of wagons needing light or medium repairs. A shortage in Yorkshire was due partly to failure to provide for local fluctuations in movement demand and notably for a sharp, though seasonal, increase in production. In September, 1958, over 6 per cent of British Railways wagon stock was under repair. A year later this percentage had risen to over 8, and the total number of wagons available for traffic was 11 per cent less. There are indications of increases in merchandise and mineral traffics. British Railways should be prepared, with an adequate wagon fleet.

Success of S.R. Kent Coast Electrification

EXTENSION of electrification at 750V., d.c., brought into service by British Railways, Southern Region, last June, of the Kent Coast line from Gillingham to Ramsgate and conversion of the Sittingbourne to Sheerness and Faversham to Canterbury East and Dover lines have proved very successful and fully justify the expenditure of money and materials. In the first six months of operation of the new electric services sales of tickets in the electrified area increased by nearly one-third over the same period of 1958; 40 per cent more passengers arrived by rail in the area; and stations on the newly electrified lines earned an additional £50,000 revenue. Any notion that these spectacular increases were caused primarily by the exceptionally fine weather during the summer of 1959 is disproved by the figures for November. The overall increase of ticket sales in and to the area for November over the same month in the preceding year was more than 30 per cent. Some stations show great increases in receipts during the month. At Rainham, between Gillingham and Sittingbourne, receipts rose by 300 per cent compared with the previous year, at Canterbury by 100, and at Sittingbourne by 40 per cent. The increase in travel from Kent to London has not been confined to season ticket-holders. Shopping trains and the new late theatre trains have been very popular. Many theatregoers are using the combined rail and theatre booking facilities covering several places of entertainment in London.

Self-Sufficiency for Indian Railways

PRODUCTION in India of equipment for the Indian railways has much increased in the last few years. Promotion of indigenous production is one of the duties of the Indian Railway Equipment Advisory Committee. The Deputy Minister of Railways, Mr. S. V. Ramaswamy, addressing the committee in New Delhi last month, stated that during the period of the Third Five-Year Plan there was likely to be a

further substantial reduction in the proportion of railway purchases imported. There would be great scope, he added, for manufacture in India of diesel and electric locomotives, accessories, and spare parts, shock absorbers, roller bearings, and electric signalling equipment. He urged Indian industry to study and make use of the results of the research into techniques and other manufacturing problems conducted by the Railway Research Organisation and by other research institutions in India, so as to facilitate supply of more railway requirements. It may be some time before specialised products such as complete diesel and electric locomotives can be produced in quantity by Indian industry. Meanwhile there must be reliance on imports, though many items are now manufactured in India with the aid of British and other capital, experience, and knowledge of techniques.

Lisbon Underground Opened

THE opening by Admiral Americo Tomás, the President of Portugal, on December 29, of the first stage of the Metropolitano de Lisboa, the first underground railway to be built in Lisbon, should go a long way towards solving the problem of increasing surface traffic and the resultant congestion. The section now open consists of two double-line routes, one starting from Sete Rios and the other from Entre Campos and converging near the Praça Dos Restauradores, a busy traffic centre. The next stage involves the extension of these two routes to the Rossio Square, where they will be joined by another route originating in the residential area of Alvalade. The scheme will be completed by additional routes radiating from the Rossio Square in a north-easterly direction to Madre de Deus, and in a westerly direction to Alcântara. The new lines are laid to gauge of 4 ft. 8½ in. and are entirely in tunnel. The 750-V. current for traction purposes is supplied through a third rail, with running rail return. The total cost of the first stage of the line, which is four miles long, was £2,450,000.

Privately-Owned Railways in Japan

ALTHOUGH the 3-ft. 6-in. gauge Japanese National Railways, with a total route mileage of 12,600, is much the largest system in the islands, and conveys by far the largest share of goods traffic, the mileage of privately-owned lines is considerable, about 4,700. Many of the 177 concerns are small, but there are some 20 major private railways, with a considerable length of electrified line. Apart from the Tokyo Underground Railway, owned by the Teito Rapid Transit Authority, most of the major lines are electric "rapid transit" lines, carrying a heavy passenger traffic in and around larger cities. Considerable use is made also of diesel railcars. A notable feature of most of these railways is the extent to which they have recently acquired new rolling stock, both electric and diesel, and the amount of re-signalling. In this respect the private railways have been of great help to Japanese industry, as providing a steady home market and means of testing the rolling stock and equipment provided. Besides railways, the major undertakings operate bus services, hotels, land and house agencies, and department stores.

Overseas Railways, 1959

THERE is no sphere of activity in which railways throughout the world, in widely different economic and geographical environments, are not making efforts to reduce costs and otherwise improve efficiency, to adjust charges, to maintain traffic in the face of growing competition from other forms of transport, to handle economically the increased traffic arising from development of the countries they serve, and to improve staff training and welfare. That is the main impression gained from the articles in "Overseas Railways, 1959," by the chairmen of the boards of privately-owned and nationalised railways, general managers, and other senior officers. The publication is the subject of brief notice on page 41. The less favourable economic situation of some railways last year, compared with 1958, by restricting funds available for expenditure on plant and equipment has complicated the task. The placing in service of diesel locomotives and railcars has created problems of maintenance and of strengthening track and re-signalling to deal with the faster and heavier trains. Electri-

fication has made considerable progress in Brazil, India, New South Wales, and South Africa. Economic development of many territories must necessitate further heavy expenditure on motive power, rolling stock and other railway equipment in the near future, as must the need almost everywhere to deal efficiently with traffic already increased.

Success of Pullman Credit Card Scheme

TO avoid the necessity for directors and executives of firms to carry cash for expenses in Pullman cars on British Railways, or to disburse it when entertaining *en route*, the Pullman Car Co. Ltd. in the autumn of 1958 introduced credit facilities. The basis of the system is a card bearing the name of a representative of the company concerned, signed by him, and produced when a bill for refreshments or the Pullman supplement ticket is presented by the conductor of the car. The scheme has proved very popular. Many large concerns are taking advantage of it. The facility is of special advantage in trains such as the "Master Cutler," "Tees-Tyne Pullman" and "South Wales Pullman," in which, as they convey many business acquaintances, there is a good deal of impromptu entertaining. Railway has been at a disadvantage compared with other forms of travel in the need for passengers to carry money for refreshments, especially when there is spending on unforeseen entertainment. The Pullman credit card overcomes this. The system might well be adopted in British Railways' own refreshment cars.

Restaurant Cars for Prompt Meal Service

QUICK service of restaurant car meals, important where there is more than one sitting, is facilitated by good design of the saloon, pantry, kitchen, and corridor and other space. This is a notable feature of the unclassed restaurant cars built for British Railways by the Birmingham Railway Carriage & Wagon Co. Ltd. and described elsewhere in this issue. The vehicles are intended for meal service only. The saloon gangway is wide and the movable furniture is designed for comfort in sitting at table but without the more cushioned ease rightly provided in seating occupied for longer periods. Pegs, and slatted shelves below the chairs are provided for those who bring with them coats and other *impedimenta*. The grab poles in the draught screens in the saloon are useful, despite efforts made in coach suspension and in other ways to achieve smooth running. Kitchen space is saved by means such as hinged shelves and a storage pocket projecting under the seat in the staff compartment. Particular attention has been paid to heating, lighting, and the positions of equipment in kitchen and pantry. Much use has been made of recently-developed materials.

Marshalling Yard Problems

PROBABLY no problems with which signal engineers are concerned are so involved as those relating to the operation of marshalling yards and the satisfactory control of the running of the wagons as they pass from the hump to their respective sorting sidings. The principal steps in the process known as mechanisation were not entered on until between the wars. They were the outcome of a large expenditure on research and practical trial, and admittedly succeeded in putting yard operation on a new footing. Much remained to be done, however, when the development of electronic devices offered a means of arriving at a more accurate assessment of the many variable factors involved and achieving a greater degree of automaticity than hitherto had been available. It was of great value, therefore, to members of the Institution of Railway Signal Engineers to hear the recent paper from Mr. D. L. Turner, of the British Railways Research Department, dealing with the complexities of this question and setting out some conclusions drawn from tests carried out at Whitemoor Yard and recording his opinions on the present state of knowledge on this important subject.

Disinfecting Equipment on Paris Metro

UNTIL 1939 many of the Paris Métro stations, now numbering 334 on 14 different lines, carrying 3,700,000 passengers daily, were sprayed regularly with essence of lemon,

mint and so on to refresh the air in the passages and along platforms. The process possessed no real disinfecting value and was abandoned in that year for lack of materials. In 1945 trials were made with bactericidal substances which, mixed with perfumed water, had a positive hygienic effect. Since July, 1959, about one train in seven on each of the Lines 1, 4, 8 and 9, has been fitted with the necessary equipment, attached to the tail lamp iron and connected by hose to the brake piping through an electrically operated valve. This last is in the circuit of the push-button closing the doors, worked by the guard. When energised it directs a fine spray towards the 6-ft. way. The 4½-gal. container is replenished weekly when the train goes into shed for general inspection. Extension of the arrangement to the remaining lines is expected to take some years.

Broken Rail at Slough

THE derailment at Slough on May 1, 1959, was remarkable in that Brigadier C. A. Langley, who conducted the inquiry, could find no other accident of this class to have been caused by a broken rail in the Western Region or on its predecessor, the Great Western Railway. The leading features of the case will be found in our summary of his report appearing in this issue. The ganger is held to be at fault in not being sufficiently careful when he removed the fishplates for oiling not long before when he could have seen the cracked state of the rail. Fortunately, the results for those on the train, which was running at 70 m.p.h., were not serious. Although the track was totally destroyed over an appreciable distance, the vehicles were kept well in line by their Buckeye couplings, now standard for all main line corridor stock.

Bargain Travel by London-Bedford Diesel Service

INTRODUCTION next Monday by British Railways, London Midland Region, of multiple-unit diesel trains over the former Midland Railway main line between St. Pancras and Bedford will be accompanied by that of special cheap day return tickets designed to encourage off-peak travel. Some details of the new service were given in our October 2, 1959, issue. Obtainable at all stations, the new tickets will be generally available for outward travel by any train after 9.30 a.m., Mondays to Fridays, and for return travel by any train except from St. Pancras between 4.30 p.m. and 6.30 p.m.; and also by any train on Saturdays and Sundays. The scope of the reductions is shown in the new second class cheap day return fares from Bedford to Elstree, 8s. 9d., against the ordinary return fare of 14s. 6d.; and from Flitwick to St. Pancras, 9s., against 15s. 6d. ordinary return and 10s. 3d. existing cheap day fares. The London Midland Region is making a vigorous effort to win traffic with a combination of comfortable new trains, faster and more frequent services, and lower off-peak fares.

Beugniot Locomotives

A HOGMANAY browse through Colburn, some 90 years after its publication, brought several reminders that there is rarely anything new, particularly in railway mechanical engineering. Among these reminders was a description of the Beugniot locomotives. Today it is the Beugniot levers which are used, principally in four-axle rigid-frame diesel-hydraulic locomotives, these being resuscitated about 1949-50 by a locomotive builder who before the war had built only a few small-power diesel locomotives and never a steam locomotive. But these levers, fitted to give easier curving and smoother running on the straight of locomotives with a long nominally rigid wheelbase, were only a part of Beugniot's locomotives, at least two of which were made just 100 years ago by André Koechlin, forerunner of the Société Alsacienne. Other features included the carriage of a part of the engine weight on the first axle of the tender; and, more remarkable, the positioning of the cylinders immediately in front of the driving wheels; the piston rod went through the front cylinder and was connected to a true "cross" head, from which one connecting rod went to an outside crank and another to a crank on the axle, the Beugniot levers themselves were an adaptation of Baldwin's patent truck of 1842, and fairly widely used by that builder.

Costa Rica Railway in 1958-59

THE year ended June 30, 1959, was a successful and busy one for the Costa Rica Railway, and its wholly owned subsidiary the Northern Railway Company (of Costa Rica), a U.S.A. corporation. By a working agreement made in 1905, the Northern Railway Company, then owned by the United Fruit Company, and virtually a banana railway, became the sole operator not only of its own line, but also that of the Costa Rica Railway Co. Ltd. The agreement allowed the taking of all profits in exchange for a considerable annual rental to be paid to the English company. This continued through the peak years of the banana industry when Port Limon, situated on the east coast of Costa Rica, rose to become the foremost banana exporting port in the world, with an annual figure rising to 11,000,000 stems.

Panama disease struck the area shortly after this working agreement was signed, and although production increased up until 1915 it then commenced to decline until 1942, when the United Fruit Company abandoned its operation completely. A mutual settlement was reached in 1941, whereby the Costa Rica Railway Co. Ltd. acquired the northern company, which continues to operate both lines as a single system, according to the working agreement of 1905.

The Railway runs through many different kinds of country, stretching from the humid coastal zones around Limon, to the higher slopes around Tres Ríos, famous for high quality coffee. San José the capital city has an altitude of 4,865 ft. and is 103 miles from Limon. The western terminus is Alajuela, 14 miles from San José.

The line's maximum curve is 170 ft. rad., and the governing grade is 1 in 22 in an uncompensated curve of 440 ft. rad. Main line rails are 60 or 70 lb.; branch line rails are 50 and 60 lb.

Three regular schedule passenger trains are run daily, both east and west, but to overcome the problem caused by the very contrasting grades with consequent variation in hauling capacity of locomotives, the 103 miles from Limon to San José are divided into three sections: Limon-Siquirres, Siquirres-Peralta, and Peralta west to San José and Alajuela. Locomotives working in multiple can haul 620 tons from Limon to Siquirres, where it is necessary to reduce to 520 tons into Peralta. A further reduction is made in Peralta, and 300 tons can then be hauled into San José. Each section has its own supervisory staff and locomotives and train crews for extra freights.

To reduce delays on the road and to insure that preferential cargo, such as gasoline and vegetables reach their destination with the minimum delay, through trains were inaugurated on September 11 from Limon to San José, and San José to Limon. Train crews and engineers change trains en route, in Peralta (55 miles) to avoid inconvenience to personnel by being away from their home base.

Between June, 1956 and June, 1959 many wooden bridges were replaced by steel and concrete and it is expected that this will prove a considerable saving in the years ahead. A total of 132 bridges were repaired at a cost of \$210,000 and 35 new bridges were constructed for a total of \$135,339. A bridge 508 ft. long was constructed over the Estrella River, to allow access to rich banana lands being brought into cultivation.

Conversion to diesel traction was completed by June, 1959. This made the Costa Rica Railway the first commercial railway in Latin America to be completely diesel hauled. In addition to the 18 52-ton International General Electric Company diesel-electric locomotives which cost \$2,000,000, six second-hand shunting locomotives were acquired. This made possible retirement of the 34 oil-burning locomotives.

The economies resulting were soon apparent as shown in the following table:

	1955 (Steam)	1959 (Diesel)
Repairs	\$138,936	\$66,849
Other supplies	\$6,753	\$9,848
Fuel	\$368,447	\$130,533
Lubricants	\$4,028	\$14,391
Total	\$518,164	\$221,621

The decrease in costs were achieved in spite of an increase in ton miles from 21,055,972 to 27,597,943, or 31.08 per cent. The new diesel locomotives (400 h.p. at traction motors) have

a 500 h.p. rating at 60° F. sea level and their dynamic braking equipment, using the traction motors as generators, has proved successful in holding heavy trains on the steeper grades. Although designed to operate in multiples of one, two, three or four, it was found that two coupled gave the best results, because of difficulties in controlling the length of train made possible by four-locomotive operation around the curves between Peralta and San José.

Because of further increases in the volume of traffic, it was necessary to purchase additional motive power; three second-hand 450 h.p. G.E. locomotives arrived in April 1959, bringing the total to 27 diesel-electric locomotives. These were 80 ton units with Cummins engines, and had to be altered considerably to give clearance in stations and sidings. The weight was reduced to 56 tons by burning out large sections between frame members. Further weight was taken off by burning out circular holes in the neutral axis of the structural shapes. Axles were cut down and the width of the bogie frame reduced. These locomotives cannot be operated in multiple and will work on the coastal plain. Five Hyster cranes were constructed in the Northern shops in Limon during the year. These are powered by Allis Chalmers Buda 32-h.p. diesel engines, and will prove an important factor in increasing the rate of discharge on the Limon Wharf.

In addition to general repairs to freight wagons, 34 35-ton capacity all-steel wagons were constructed in the shops during the past 14 months. It is planned to build a further 41. A replacement programme has been started whereby all wooden wagons will be converted to steel when their condition demands extensive repairs. This project involving over 400 wagons will take several years to complete.

Tasmanian Transport Commission

THE report of the Tasmanian Transport Commission, for the year ended June 30, 1958, a copy of which has been sent us by Mr. C. E. Baird, the Commissioner, shows that the loss on all the operations of the Commission except traffic control was £646,703, or £292,903 less than the loss of £939,606 incurred in the previous financial year.

The following is a summary of operations:

	1956-57	1957-58
Net loss on railway services	£1,265,027	£1,020,001
Expenditure on administration and public vehicle control	49,407	53,532
Net receipts, road passenger services	14,131	7,678
Net receipts, road goods services	2,478	8,407
Loss for year	£939,606	£646,703

The operating results for the 3-ft. 6-in. gauge railways were:

	1956-57	1957-58
Revenue	2,534,462	2,569,233
Working expenses	3,216,924	2,980,614
Loss on working	682,462	411,381
Depreciation	230,246	237,020
Interest	352,319	371,600
Deficit	1,265,027	1,020,001

Total train mileage was 1,567,888, compared with 1,854,496 in the preceding year. The tonnage of goods, minerals and livestock carried was 1,095,705, against 1,061,070 tons in 1956-57. Revenue from goods, minerals and livestock increased from £2,240,000 in 1956-57 to £2,290,000 in 1957-58. The greatest increase was in firewood and pulpwood. Passenger railway services were further reduced to offset continued losses caused by the falling off in public support. Country passenger services have been eliminated with the exception of the "Tasman Limited," a fast passenger train with refreshment facilities connecting Hobart, Launceston and Wynyard, a rail motor service from Hobart to Parattah, workmen's trains between Hobart and New Norfolk and between Devonport and Burnie and the "Evening Service" between Hobart and Launceston. Suburban services have also been curtailed.

Diesel-electric locomotives continue to haul most goods trains. A total of 11,815 diesel-powered trains accounted for 222,605,459, and 9,445 steam trains accounted for 50,180,253 trailing ton-miles. Whilst the number of diesel-electric locomotives passing through the workshops increased slightly, there was a reduction of £10,469 in diesel-electric maintenance during 1957-58. Railcars available for traffic amounted to 17 compared with 15 for the previous year. No new locomotives were brought into service in 1957-58. Nine steam engines were

written off, a further eight were stored, and one was used as a steam cleaner. Ten more steam locomotives have been written off during the current year. Flooding during the year damaged permanent way and communications. Re-laying of main routes with 82-lb. rail proceeded satisfactorily, as did the replacement of timber bridges with steel.

During the year the Commission approved new proposals for insurance of railborne goods. All freight is now carried at Commissioners' risk for premiums varying from 3d. for consignments with a freight charge of 5s. or less, to 5s. for consignments weighing from 40 cwt. up to the capacity (volume or weight) of a 7-ton wagon. For consignments in excess of a wagon-load, 5s. is charged for each additional unit of 7 tons. This scheme, unique in Australia, has been very well received by commercial interests in Tasmania. Before its introduction the Commission, in common with all other Australian State railways, had two rates, the Commissioners' risk rate and owners' risk rate, and most goods handled by the Tasmanian Railways were transported at owners' risk. In the event of damage or loss due to derailment or other cause, the management was invariably involved in argument. Under the present scheme, there are no such disputes. The small premium charged, seems adequate to meet any possible claims.

Indications are reported to be that railway finances in 1958-59 will show a further improvement. It is thought that railway operating expenditure in 1958-59 will be below the 1957-58 figure provided there are no further substantial increases in the basic wage or margins. Interest and depreciation charges continue to increase and these charges now represent nearly three-fifths of the current deficit. Improved handling methods will continue to be introduced.

Other matters receiving attention at present are mechanisation of track gangs, high pressure treatment of hardwood sleepers, welding of rails to reduce track and equipment maintenance costs, improvements in the low-speed performance of diesel-electric locomotives to increase tractive effort, purchase of three additional diesel-electric locomotives of higher power to assist in further reductions in steam power, more efficient and economical working of goods depots, and training of staff for electronic accounting to be introduced in 1960.

Changed Rôle of the G.C.R. Main Line

CONVERSION of the Marylebone-Leicester-Nottingham-Sheffield main line of the former Great Central Railway, now part of the London Midland Region of British Railways, to a route mainly for goods and parcels traffic, is one of the most far-reaching alterations in traffic routing made since nationalisation. In view of the peculiar circumstances this step is unlikely to be repeated on a similar scale elsewhere on British Railways. Some details were given last week. The main-line passenger service has been reduced from last Monday to three semi-fast trains each way on weekdays between Marylebone and Nottingham, besides the cross-country services via Woodford Halse and Banbury. It is intended to close at a later date the wayside stations between Aylesbury and Nottingham at which the semi-fast trains do not call. The purpose, briefly, is to eliminate unremunerative passenger mileage and to free the G.C.R. main line for goods, parcels and other traffic, so relieving other main lines.

The reasons why it has been practicable to withdraw expresses from the Marylebone-Nottingham main line will appear from the following. Only at the end of the last century was the Manchester Sheffield & Lincolnshire Railway main line extended from Sheffield to London. As the Great Central Railway it became the last major railway link with London to be built. It provided a third direct route to London from Manchester, the West Riding, Sheffield, and Nottingham, and a second from Leicester and Rugby. Traffic on the London & North Western, Midland, and Great Northern Railways no doubt seemed to justify the decision, but there were drawbacks in the new trunk route which became apparent only later. First, the link with the Metropolitan Railway at Quainton Road, north of Aylesbury, forced the line to traverse sparsely populated country in Northamptonshire and Buckinghamshire; apart from Rugby it touched no important town south of Leicester. Second, it required use of the heavily-graded Metropolitan route between Aylesbury and London which was already carrying a considerable suburban traffic, though work-

ing of some expresses *via* High Wycombe over the Great Western & Great Central Joint line was a palliative. The G.C.R. offered a standard of service which caused concern to the rival lines, especially between South Yorkshire and the Midlands and London. It had barely had time to establish itself before the war of 1914-18, followed by grouping under the Railways Act of 1921. No doubt its interests in South Yorkshire and North Lincolnshire influenced its inclusion in the new London & North Eastern Railway. For the latter, however, it was a drain on the traffic of the East Coast main line by which the G.N.R. had provided connections and fast through services from Sheffield and Nottingham. The only important new centre to be tapped, as far as the L.N.E.R. was concerned, was Leicester. Nevertheless the L.N.E.R. maintained the former G.C.R. London service fairly well up to the pre-war standard. The line between Woodford & Hinton (now Woodford Halse) and Banbury provided a link between the L.N.E. and Great Western Railways, cutting across the territory of their rival, the London Midland & Scottish Railway.

Nationalisation in 1948 altered the situation. Where once the G.C.R. had been the means of stimulating rivalry between three of the four main-railway companies, it now duplicated in most cases facilities which could be provided as well or better by other routes. So long as the demand for passenger transport by rail remained at the level of the immediate post-war period the duplicate route continued to be valuable. As the rise of the private motorcar and other means of personal transport made steadily greater inroads into short- and medium-distance passenger traffic, the need for an alternative main route on this scale was lessened. The situation on the G.C.R. route is in several respects unique. Some of its passenger services are hopelessly uneconomic; others are well patronised. Some stretches are considered by the British Transport Commission to be virtually redundant, but others are of considerable potential value in the railway system of the future. It was, therefore, held to be a case for compromise.

High utilisation of track, frequency of trains, and thus good passenger (and freight) service depends ultimately, as has been stated in the British Railways modernisation plan, on reducing the speed gap between the slowest and the fastest trains. When modernisation schemes are completed, there will still be a gap of 30 m.p.h. or more between the average speeds of the fastest passenger expresses and the normal mineral trains even when fitted with vacuum brakes throughout. The existence of two more or less parallel main routes, the former Midland and the Great Central, over about 160 miles offers an advantage in planning services so that one route carries the faster and the other the slower traffic.

The unique circumstances of the Marylebone-Nottingham-Sheffield main line are helping to realise three aims. First, to concentrate on it a large proportion of the heavy goods traffic between the Midlands and London would give much more freedom of movement, as suggested above, on the Midland Railway route for passenger trains running at the highest permitted speeds. Second, withdrawal of passenger service on the G.C.R. route, except where it has the advantage in distance, can be a way of effecting economies; a figure of £140,000 a year was mentioned at a recent Transport Users' Consultative Committee inquiry. Third, the G.C.R. route is well placed for the steadily expanding parcels traffic. A high proportion of all the London Midland Region parcels originate in London, Leicester, Nottingham and Manchester, all directly served by the G.C.R. route. Concentration of parcels traffic on it would facilitate a better service. It would also enable the traffic to be removed almost entirely from the Midland Railway route, where handling arrangements inevitably cause a good deal of interference with the movement of passenger trains and of the passengers themselves. The method by which this would be achieved has been described in the London Midland Region freight traffic plan, outlined in our issue of February 6, 1959.

Parcels concentration depots are to be set up at strategic points, including the four centres served by the G.C.R. line, and from them collection and distribution of all railborne parcels traffic is eventually to be undertaken by road vehicles. Among the many benefits of this scheme would again be quicker and more comfortable passenger travel by the Midland Railway route, which would be less congested by parcels traffic. Passenger trains generally could be accelerated and station stopping

times cut, and station platforms would be less encumbered by packages and barrows which inconvenience passengers.

Many frequent travellers, in Nottingham and Leicester particularly, have come to regard the G.C.R. as a convenient means of travel. But to and from London, as was apparent from the loadings of the trains, few people knew how good the service was. Seats were easy to find. On the former Midland Railway line first-class seats are always at a premium at popular times, no doubt largely because of the faster service. The steps now taken do not involve the closing of the line, though withdrawal of long-distance expresses, with the prestige facilities such as restaurant cars, normally associated with these services, has much reduced the usefulness of the service for through passengers.

The G.C.R. line connects at Sheffield Victoria with the electrified main line through Woodhead Tunnel to Manchester. A considerable reduction in passenger services south of Sheffield appears to deprive this high-capacity line of an important source of through traffic. Figures of through passengers disprove this. The main purpose of the electrification was the improvement of east-west communication across the Pennines, especially for Yorkshire coal. The G.C.R. line between Sheffield and Nottingham is seriously affected by colliery subsidence, so that potential speeds could never be attained in practice. The Midland route through the Erewash Valley, though also affected, is not so much involved in future developments in this still expanding coalfield.

Announcement of the proposals coincided with a period of exceptional difficulties on the alternative Midland route. They include the additional engineering works involved in the otherwise unconnected scheme to introduce a diesel service between St. Pancras and Bedford. It coincided also with the start on speeding up the electrification of the Manchester-Euston route. This involved diversion of services on to the Midland route to St. Pancras. Journey times to and from Marylebone could not be made short enough to make this an acceptable alternative relief route. One reason is the dense suburban service south of Aylesbury, complicated by the quadrupling and electrification work on the Metropolitan Line of London Transport between Harrow and Amersham. Transfer of Euston-Birmingham trains to the Paddington-Birmingham route, another move to accelerate the electrification of the Euston main line, has increased the occupation of the line from Paddington through High Wycombe to such an extent that diverted Great Central line trains could no longer be accepted. In addition, backlogs of track and bridge maintenance and renewal from the war and post-war years have still to be made up on the G.C.R. main line.

The U.S.A. Railroad Position

(By a correspondent)

A HALT was called to the U.S.A. steel strike on November 7, and wagon loadings for 45 weeks to that date are known. Despite the steel strike and other labour disputes, the railroads forwarded 538,110, or 2 per cent more wagons than in 1958. Coal output was nearly 2 per cent lower and the mines loaded 76,950 fewer wagons. The movement of ore decreased by 249,380 wagon-loads, or over 15 per cent. These losses were offset by a remarkable increase of 943,210, or 7 per cent, in the number of wagons loaded with high-rated merchandise. There was also a rise of 165,930, or 10 per cent, in the loadings of forest products and 358,210 flat wagons carried road trailers—an advance on 1958 of 123,030, or 52 per cent.

During nine months to September the railroads raised total operating revenues by \$578 million, or 5 per cent, to \$7,391 million. Freight revenue of \$6,271 million, was up 6 per cent, but passenger revenue of \$495 million was down 2 per cent. Operating expenses rose by \$194 million, or 3.5 per cent, to \$5,807 million. The operating ratio dropped from 80 per cent to 78.6 per cent. Earnings (before charges) increased by \$40 million, or 12 per cent, to \$549 million, while net income at \$393 million was \$40 million, or 11 per cent, over 1958, but \$147 million, or 27 per cent, below 1957.

The railroads have survived a troublesome crisis remarkably well and should make headway in 1960, if the steel strike does not start afresh when the present uneasy truce ends.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Railways to Relieve the Roads

December 5

SIR.—In August and September last the number of people who died in road casualties was 1,114 and the number seriously injured, 14,847. Many more were slightly injured.

As to the October figures, Mr. Ernest Marples, Minister of Transport has said: "I personally view with horror that we can slaughter and kill more than 6,000 of our citizens every year." Unfortunately, he does not name any remedy.

More roads is not the answer, but a lot of slaughter can be avoided by a heavier volume of traffic passing to the railways, which should reduce their charges and expand their services—especially cross-country—and so make it easier for people to travel by rail, the safest means of transportation.

May I quote from my letter which you were good enough to publish in your August 8, 1952, issue: "Given the right leadership, coupled with simplicity of organisation and cutting of costs, rail transport can successfully challenge and reduce road haulage to its proper proportions, and not only give satisfactory service, but earn the gratitude of millions in promoting more safety on the roads, and proving that modern transport can be a blessing instead of a curse." This still holds good today.

The Government and the British Transport Commission should decide now what they intend to do about this national calamity.

Yours faithfully,
ROBERT W. LEWIS

Beth-el, 104, Leggatts Way, Watford

Development on the North Eastern Region

January 2

SIR.—In an article in your January 1 issue, Mr. T. H. Summerson, Chairman of the North Eastern Area Board of the British Transport Commission, stated that the North Eastern Region would be modernised by the end of 1964, adding that the capital-starvation of the preceding 40 years would then be made good in 11. Actually the London & North Eastern Railway increased its capital expenditure from £339,000,000 in 1923 to £348,000,000 in 1931 and then had to move cautiously owing to the decline in traffic and receipts during the depression in trade and industry. Aided by the Development (Loan, Guarantees & Grants) Act, 1929, and the Railways Agreement Act, 1935, the L.N.E.R. raised its capital expenditure to nearly £356,000,000 by 1938.

Between 1935 and 1937 the main lines of the company from Kings Cross to Leeds, Newcastle, and Edinburgh, were in such good shape that it could run five high-speed trains with a punctuality unequalled before or since. Many users of the railway in the North East still regret that the "Silver Jubilee" was not reinstated after the war.

During the war the Government spent £3,571,000 in L.N.E.R. territory on works designed to improve traffic movement. In the N.E. area additional up and down lines were built between Pilmoor and Thirsk, a distance of six miles. A set of sidings was also laid down at Skelton Bridge, designed to fit into any future scheme for constructing a concentration yard for handling all traffic passing through York. British Railways thus took over an area with ample scope to deal with any peacetime traffic likely to arise. The subsequent addition of an awkward section of the West Riding to the old North Eastern territory cannot account for decreases in 1958 from 1957 of 7,282,000 tons (11 per cent), 358,030,000 ton-miles (12 per cent) and £4,874,000 (10 per cent) in freight train receipts. The 1959 figures at present available point to a continuing downward trend in freight business, while the expenditure on diesel multiple units has not prevented a fall in passenger journeys.

Mr. Summerson's remedy for this state of affairs is "to concentrate on those services, both passenger and freight, in providing which railways have what may be called natural advantages, and to let the roads carry the rest." This dictum

entirely overlooks the significance of traffic volume in railway operations. The railways cannot shed traffic to road or water carriers, because the closer they operate to capacity, the lower their unit cost of working. Railroading, as the Americans insist, is a volume business. To quote rates that will secure traffic, the railways must maintain a high volume of traffic and so reduce their working costs. The North Eastern Area Board may be an influential body with the best intentions in the world, but it cannot ignore the fundamental principles of transport economics.

Yours faithfully,
R. BELL

Clacton-on-Sea

French Special-Wagon Development

December 29

SIR.—Referring to the editorial note in your November 6 issue, we must with respect correct the statements contained therein which will mislead your readers unless corrected. Your note states: "Considerable orders have been placed recently in France for special wagons designed to give speedy and convenient loading and unloading. They are of several types, but by no means all of these have been fully proved in large-scale practice; indeed, only the order placed with A.N.F. seems to come within that category."

We know that the order for 100 wagons placed with Ateliers du Nord de la France (A.N.F.) is for the S.E.A.G. design, but to infer that only this design has been fully proved is quite inaccurate. The true position is that of a total of approximately 1,350 sliding-roof wagons at this moment in service on the French National Railways, 500 only are S.E.A.G.; the rest are MacGregor-Comarain, with the bias in favour of MacGregor increasing rapidly. By the end of 1960 there will be a total of 1,500 MacGregor wagons in service.

You will agree, therefore, that your statement that "already some hundreds of sliding-roof wagons mainly of S.E.A.G. type, but with some of MacGregor-Comarain pattern, are in use, but now a move has been made to the sliding-side form with fixed roof," is refuted by fact and is quite misleading.

It is quite true that 300 sliding-side wagons (with fixed roof) have recently been ordered (100 to Ateliers du Nord de la France—S.E.A.G. design—100 to Société Nouvelle des Ateliers de Venissieux, and 100 to Compagnie Industrielle de Matériel de Transport): but these wagons are "private" and not owned by the French National Railways, which, in view of their very special nature, did not want them in their fleet. In fact, these wagons have been privately ordered by Société d'Etudes de Wagons Spéciaux (S.E.V.S.) which is especially in charge of sliding-side wagons, and opening roof wagons of special characteristics making them basically different from the wagons owned by the S.N.C.F. (for example, three-axle type wagons).

The first orders placed by the French National Railways for opening roof wagons, some five years ago, were placed with the A.N.F. (S.E.A.G. design) and these 500 wagons are, of course, still in use. Since that time, however, all the opening-roof wagons have been ordered to MacGregor design: a first order for 250 covers fitted on existing wagons; a second for 250 new wagons; and a third order for 1,000 new wagons, about 350 of the latter being already in service.

The sliding-roof and opening-roof wagons cannot be compared; their object is quite different. The former are mainly used for palletised goods loaded by a fork lift truck, the latter for vertical handling by travelling crane. Although the sliding-side wagons may have a certain field of application, this is certainly not comparable with the possibilities given by the opening-roof wagon, and that is why S.N.C.F. decided to have the second type only in its fleet.

Yours faithfully,
C. C. HOPKINS
for J. T. Plumley, General Manager

Rubery Owen & Co. Ltd., Darlaston, Wednesbury

THE SCRAP HEAP

Bullseyes

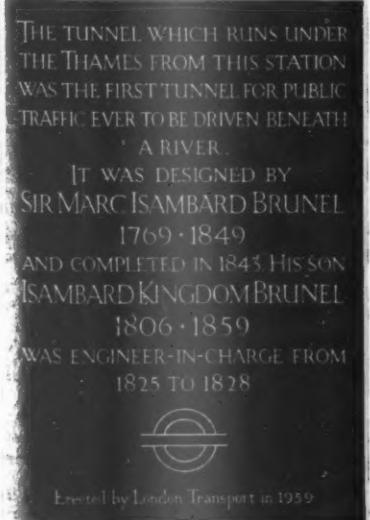
A shortage of small change at Bacau, Eastern Roumania, has forced bus conductors to offer passengers cigarettes or sweets as change, according to a Roumanian newspaper. — From "The Evening News."

Push-and-Pull Service ?

To get into a crowded train on the Piccadilly Line, a man pulled a passenger out of a car and threw him on the platform, it was said at North London Magistrates' Court. The man was summoned for assault. He was absolutely discharged on payment of £27 15s. compensation for loss of wages to the passenger he had pulled on to the platform, and fined £2 with £10 10s. costs for behaving in a disorderly manner in a train.—From the "Evening Standard."

Brunel Plaque at Wapping Station, L.T.E.

London Transport Executive has affixed at Wapping Station, on the East London Line, a plaque recalling the connection with the Thames Tunnel of Isambard Kingdom Brunel (1806-59) and his father, Sir Marc Isambard Brunel (1769-1849). It is fitting that the plaque should have been on site and ready for erection at the end of 1959, the year marking the centenary of the death of I. K. Brunel. Reference to the centenary was made in several of our issues in 1959. Wapping Station is notable in that access to the platforms is by one of the circular shafts of the original Thames Tunnel, built in 1825-43 by Sir Marc Brunel. Isambard Kingdom Brunel was Engineer-in-Charge of the work in 1825-28. The portion of Wapping Station above ground is being rebuilt, as described briefly in our issue of September 11, 1959. To avoid possible damage, only a token erection of the



Plaque commemorating the association of the Thames Tunnel with the Brunels, father and son

plaque has been possible. When the work is completed towards the end of 1960, it will be mounted in a prominent position on a pillar facing passengers as they enter the station. The plaque, of grey slate, is 30 in. high and 20 in. wide.

Bakerloo Bride

A Tube Train guard seeking a widow with a view to matrimony, advertises in a London weekly newspaper, but stipulates that his prospective bride must live in "any district served by Bakerloo line."— "William Hickey" in the "Daily Express."

Happy Release

A policeman and an R.S.P.C.A. official climbed in darkness down the girders of Blackfriars railway bridge last week, to release a swan which had flown into the bridge and become caught by the neck. They walked along the track guided by railwaymen. The swan was given treatment for its bruised neck before being put back into the water. —From "The Daily Telegraph."

Lethal Luggage

An anonymous telephone call to the police on December 19 led to the discovery of a 2 lb. jar of poison crystals in a left luggage locker at Manchester Victoria. The anonymous caller, a man, told the police: "Go to the lockers at Victoria. You will find something of interest there." The 40 left luggage lockers were searched, and in the 39th was found a screw-top glass jar labelled "Sodium Cyanide." It was taken to police headquarters, where an analytical chemist confirmed the nature of the poison, stated to be "sufficient to kill the whole of Manchester." The police believed that the jar was stolen from a chemical works or one where poisons are used for industrial purposes, and that the thief, when he realised the nature of the substance, put it in the locker before telephoning the police.

Historic Tramcar Returns to London

One of the 30-year-old luxury trams, purchased from London Transport by the Leeds City Transport Department in 1949, returned recently to London for preservation by the British Transport Commission in the collection of historical vehicles at Clapham. It has been presented to the Commission by a group of South London enthusiasts who formed a "Feltham" fund, to which London Transport has contributed. The body, which weighs 12 tons was carried from Leeds by B.R.S. (Pickfords) Limited on two low-loading trailers hauled by a tractor.

The vehicle, No. 2099, was one of 100 built by the Union Construction & Finance Co. Ltd., at its Feltham Works in Middlesex. Fifty-four were allocated to the Metropolitan Electric Tramways for service in North London and the remainder to the London United Tramways for use on the Uxbridge Road Services. They were regarded at that time

as the most luxurious and efficient trams in the country and represented the first breakaway in design since the early days of tramways. The cars operated on the north side of the River Thames until 1937-38 by which time they had passed to the former London Passenger Transport Board. After being transferred to South London they continued in service until replaced by diesel buses.

Happy Journey in 1960

The New Year greeting card, the cover of which is shown in the illustration, was sent us by the Rhaetian Railway. The ticket itself is buff. The standard colour for first class tickets



Rhaetian Railway New Year greeting card for 1960

on the Continent is green, and of second class, brown. The layout of wording is typical of a Swiss ticket. Under the date are the words: "Valid for 366 days; the Rhaetian Railway wishes you a happy journey during the new year, first, second class; (fare) francs 000." The background is sky blue, with snowflakes in the corners, symbolising the attractions of the high Alps.

Hot Drinks to Choice

Dutch manufacturers of high-speed weighing equipment have produced a coin-operated machine which should be of great help to railway caterers. It is claimed to be able to supply, at any time of day or night, a cup of hot beverage or soup, according to choice: coffee, chocolate, or tea, with or without sugar; and four kinds of soup. The machine can work for 24 hr. at a stretch without supervision. The ingredients are mixed by a device actuated by a 220-V. 50-cycle electric motor; other types of motor can be supplied if desired. The capacity of the machine is 750 cups before replenishment. The whole is housed in a cabinet 5 ft. 5 in. high, 2 ft. 2½ in. wide, and 2 ft. deep, weighing 300 lb.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

Colour-light Signalling

When the signalling system at Somabula came into operation on November 23, the Bulawayo Transportation District was the first on Rhodesia Railways to have electric colour-light signalling from end to end over the main line. Somabula is the junction for the Lourenco Marques line. On the North line the Bulawayo district jurisdiction extends as far as Thomson Junction where another local electric signalling system came into operation on November 8.

A further development was the opening of the double line from the Highfields Road level crossing to Salisbury Station during December. This completed the doubling of the main line from Lochinvar to Salisbury. As on the double line from Bulawayo to Heany certain intermediate signals are operated automatically by the trains themselves. The West end of Salisbury Station has been installed with new signals, while at Lochinvar yet another local system was brought into operation a few months ago. The local signals are worked in conjunction with the main line C.T.C.

SOUTH AUSTRALIA

Electrification Proposals

Proposals to electrify the Adelaide suburban passenger services have not been abandoned but have been deferred for the time being. This was stated in the S.A. Parliament recently by the Premier, Sir Thomas Playford, who said that the original estimate for this work was £2,506,677, based on prices in May, 1950.

Estimated total expenditure was £4,743,912 including £2,237,235 which it was expected the Commonwealth would contribute under the 1949 Railways Standardisation Agreement.

Diesel railcars were introduced in

1955, following a recommendation by the S.A.R. Commissioner, Mr. J. A. Fargher. At that stage, the estimated cost of electrification had risen to £7,008,000, compared with £4,877,000 for the introduction of diesel railcars. It was also estimated at that time that the annual saving from diesel operations would be £282,000 higher than that from electrification.

NEW SOUTH WALES

Extension of Electrification

Extension of electric operations from Ultimo Road into the busy Darling Harbour Yard opened in October will provide the Government Railways with considerable cost savings. Previously electric locomotives arriving from the Western line were changed for steam power for the final three-quarters of a mile to the Darling Harbour reception sidings. Time taken to change locomotives was approximately 10 min. This saving will be increased when electrification is extended to Gosford on the Northern line.

WESTERN AUSTRALIA

Fast Rail Link to Bunbury

As a result of an increase in the maximum passenger speed on the Western Australian Government Railways from 45 to 50 m.p.h., the Australind train from Perth to Bunbury now covers the 115 miles in 3½ hr., a saving of 25 min. on the previous timing. This has been made possible by improvements in the track and centralised traffic control. The South Western main line to Bunbury is now in excellent condition after having been re-ballasted, re-sleepered and relaid with 82-lb. welded rail. The C.T.C. system between Armadale and Pinjarra, the subject of an article in last week's issue, has eliminated delays and enabled trains to operate at maximum speeds.

Introduction of faster schedules on other main lines is contemplated when improvements now in hand are completed.

VICTORIA

St. Albans Station Opened

The new contemporary style St. Albans Station, the most modern yet to be erected in the outer suburban area was opened to traffic on November 22. The new station has been re-located on the Melbourne side of the Boundary Road level crossing. Provision has been made for two sidings to stable electric trains, as St. Albans is one of the terminal stations for suburban passenger traffic. Only country trains now pass over the Boundary Road crossing. The platform previously used for trains to Melbourne has been retained for main-line country trains.

One-Class Fares

One-class train fares have been extended to the Melbourne-Stony Point line. The new one-class fare from Melbourne to Stoney Point is 11s. 6d. single and 17s. 3d. return, the old second class rate. The new rate came into operation on November 30, when an improved train service was introduced. This involved the substitution of a 280-h.p. diesel railcar for the former steam train between Frankston and Stoney Point. The diesel railcar is used to run five trips in each direction beyond Frankston on Mondays to Fridays, and three similar journeys on Saturdays, compared with the former two trains daily in each direction on Mondays to Saturdays.

DOMINICAN REPUBLIC

Diesel Locomotive Delivery

The International General Electric Company has shipped a diesel-electric locomotive from the United States to the Central Rio Haina Railway. The 60-mile long railway serves a large area of sugar cane plantations and the new locomotive will speed deliveries of cane to the sugar mills.

EGYPT

Purchase of Diesel Locomotives

A \$12,000,000 loan agreement enabling the Egyptian Republic Railways to buy 58 General Motors diesel locomotives, spare parts, and shop tools was signed in Washington on December 23, 1959. Representatives of the United Arab Republic, the Export Import Bank of Washington, and the General Motors Overseas Operations Division affixed their signatures to the loan agreement at the bank's headquarters. The order for locomotives, to be manufactured by General Motors Electro-Motive Division at La Grande, Ill., will consist of 42 units of 1,425/1,310 h.p. and 16 units of 1,950/1,800 h.p. They are scheduled for delivery during 1960.



General Motors 1,950/1,800-h.p. diesel-electric locomotive, 16 of which are being supplied to the Egyptian Republic Railways

Supplementing the agreement, the G.M. Overseas Division will assign four technicians to the United Arab Republic for periods of from three months to one year, beginning next spring, and early in 1960 the U.A.R. Railways will send six key employees of its mechanical, purchasing, and stores departments to the United States for two months of training.

UNITED STATES

Pennsylvania High-speed Trials

In an endeavour to fight the increasing competition of high-speed motorcoaches, the Pennsylvania Railroad recently has conducted some speed trials over its electrified main line between New York, Philadelphia, Baltimore and Washington. Two trains were used, one an eight-coach multiple-unit train, and the other a set of eight of the tubular lightweight Budd "Keystone" cars, hauled by a standard 2-C-C-2 locomotive of the "GG-1" type.

The distance is 224.8 miles; the

multiple-unit train, making six 90 sec. intermediate stops, took 3 hr. 25 min. southbound and 3 hr. 28 min. northbound, but was soundly beaten by the "GG-1" locomotive, which took 3 hr. 2 min. northbound and 3 hr. 5 min. southbound. Deducting the time spent at stops, the average end-to-end speed of the 182 min. run was 78 m.p.h., and the maximum attained 106 m.p.h.

The riding appears to have been reasonably smooth, but the Pennsylvania Railroad states that any regular service at such speeds would require alterations to track and signalling and new or rebuilt rolling stock. The present fastest train between New York and Washington is the "Afternoon Congressional," allowed 3 hr. 35 min. with four intermediate stops. Several other trains make the journey daily at a mile-a-minute average in 3½ hr., with six stops.

Sleeping Cars for "Coach" Passengers

Some months ago the Budd Company turned out a number of 85 ft. sleeping cars each incorporating 40 single rooms;

these were planned on the same principle as Pullman "roomette" cars, but with smaller rooms, on two levels, and intended for second class or "coach" passengers, who had not before enjoyed such amenities. Some of these cars were acquired by the Chicago, Burlington & Quincy and Baltimore & Ohio Railroads; four have now been leased to the New York Central System for the New York-Chicago "Twentieth Century Limited" and the Boston-Chicago "New England States," and four to the Northern Pacific for the "North Coast Limited."

The "Twentieth Century," throughout its past history an all-Pullman train but which lately has included reclining seat coaches in its formation (because of reduced Pullman demand), thus once again becomes a train composed entirely of single-room sleeping cars. These coach-sleepers are known on the New York Central as "Sleepercoaches," by the Burlington and Northern Pacific as "Slumbercoaches" and by the makers as "Siesta coaches."

Publications Received

Overseas Railways, 1959. London, S.W.1.: *The Railway Gazette*, 33, Tottell Street. 11½ in. x 8½ in. 120 pp. Fully illustrated. Paper covers. Price 7s. 6d.—Steps taken by railway management in many parts of the world to improve plant and equipment and to adjust rates and fares and to embark on campaigns to capture traffic and, in some cases, to combat growing competition from other forms of transport, are described by general managers and other senior officers on railways in the British Commonwealth or in countries where British practice generally is followed. Particulars are given of diesel locomotives and railcars placed in service on many railways, of measures to increase the efficiency of diesel maintenance, of electrification executed and in progress, of re-signalling projects and improvements in telecommunications, improved methods of handling goods traffic, and staff training and welfare. The maps have been brought up to date, and show many new lines recently opened or now under construction with some alterations in gauge. The last is a feature of railway activity in recent years. Mention also is made of the construction of the 4 ft. 8½ in. gauge of the Victorian Railways from the New South Wales border to Melbourne. The price of this informative and well-illustrated work remains unchanged.

Curve Surveying. By R. B. M. Jenkins. London: Cleaver-Hume Press Limited, 31, Wright's Lane, W.8. 8½ in. x 6½ in. 184 p.p. Price 35s.—The author begins by describing the setting out of circular curves (a) without and (b) with a theodolite. The (a) methods include: setting out (1) by ordinates from a long chord, and (2) by offsets either from the tangent or from chords; the two latter are limited to small-radius short curves. Calcula-

tions for the location of circular, compound, and reverse curves are discussed. This is followed by a chapter on transition curves and superelevation, its gradient, and its deficiency. It also covers the reaction between a railway vehicle and the curve it is traversing, with maximum safe speeds on circular curves. A 0-6-0 locomotive is quoted and shown in the diagrams illustrating the flange-forces involved. This leads up to consideration of the cubic parabola and the clothoid as ideal transitions for curves with small and large deviation angles respectively. Finally the realignment of railway curves by the Hallade method is described. All these matters are dealt with comprehensively, clearly, and with full calculations and formulae, many good diagrams, and appropriate tables. The whole volume is excellently produced and easy to read.

Euclid Earthmovers.—Particulars of three Euclid rear-dump trucks with payloads of 30,000, 44,000, and 54,000 lb., currently being manufactured in Glasgow by Euclid (Great Britain) Limited, are given in a new eight-page leaflet. Clear illustrations outline the main features including the twin double-acting hydraulic tipping hoists which enable non-productive time to be cut to a minimum, and the planetary drive gears in each rear wheel. Brief technical specifications are also given. Copies may be obtained from John Blackwood Hodge & Co. Ltd., 25, Berkeley Square, London, W.1.

Rapier Fork Trucks & Fork Truck Cranes.—Two sizes of diesel-powered fork truck, the 18/24 and the 18/33 for 18,000 lb. loads at 24 and 33 in. from face of forks respectively, and fork truck cranes with detachable cantilever jibs for loads of up to 13,300 lb. (at 3 ft. 9 in. outreach) are described in a new publication by Ransomes & Rapier Limited. Features of the trucks are hydraulic

operation of the hoist and tilt motions; three forward and three reverse gears, also a two-speed axle, for travelling at up to 20 m.p.h.; and three-point support on pneumatic tyres with good stability and a wide steering lock which make rapid manoeuvring possible. There are complete technical specifications, weights, dimensions, and lifting data. Illustrations show how one truck can perform a variety of duties and feature the alternative extra equipment of two driving positions in one cab. Copies may be obtained from Ransomes & Rapier Limited, Waterside Works, Ipswich.

Triang Railways.—Two new model railway catalogues have been published by Rovex Scale Models Limited; for Triang OO/HO-gauge railways (sixth edition, price ninepence) and TT-gauge (fourth edition, price sixpence). Both are copiously illustrated in colour and include brief notes on the actual locomotive classes and types represented and on the four principal main-line liveries at present in use on British Railways, all of which are reproduced on the model passenger rolling stock. Electric operation is at 12-15 V. d.c. Normally the two-rail system is used but an ingenious feature is the overhead supply to the new pantograph-equipped electric Co-Co locomotive of the Manchester-Sheffield line modelled in OO/HO gauge only. Copies may be obtained from Rovex Scale Models Limited, Westwood, Margate, Kent, and from Triang agents.

Calendars for 1960.—We have received calendars for 1960 from Pressed Steel Co. Ltd.; Nigerian Railway Corporation; The Railway Convalescent Homes; South African Railways; Railway Passengers Assurance Company; British Oxygen Gases Limited; East African Railways & Harbours; William Jones Limited; and A. A. Jones & Shipman Limited.

Use of Containers for all Merchandise Traffic

Proposed method of improving service by using self-propelled transfer cars to move containers on and off set trains of flat wagons

(By a correspondent)

IT is generally recognised that though a railway train is a more efficient method of transport than a road vehicle, it nevertheless has two main disadvantages. First, door-to-door service is not possible without special equipment. Second, the inherently efficient operation only begins when the traffic has been formed into a train and ends when the train has to be broken up. Extensive improvement in the railways' position as regards traffic which is vulnerable to road competition therefore involves not only the road-rail transfer problem, but also better methods of moving individual consignments on and off trains.

To enhance the loadability of traffic to be moved by rail three requirements are dictated by consideration of first principles. First, all possible traffic must be contained in standard packages

equipped with suitable fittings on the outside for engagement by the handling equipment—in short, use containers. Second, suitable flat wagons must be

on and off wagons. All existing methods of doing this are much too slow in operation to exploit adequately the advantages of the container and flat wagon principle.

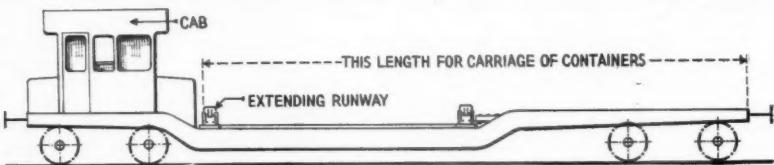


Fig. 1.—Elevation of transfer car, showing position of runway

provided. There is no question of a particular type of container needing a particular type of wagon; complete interchangeability is essential. The third requirement is equipment which will move containers quickly and cheaply

Furthermore, they all need a fixed installation, be it only a good road surface from which to work, and lack the mobility and versatility.

A container-mover without these disadvantages, and generally suited to rail-

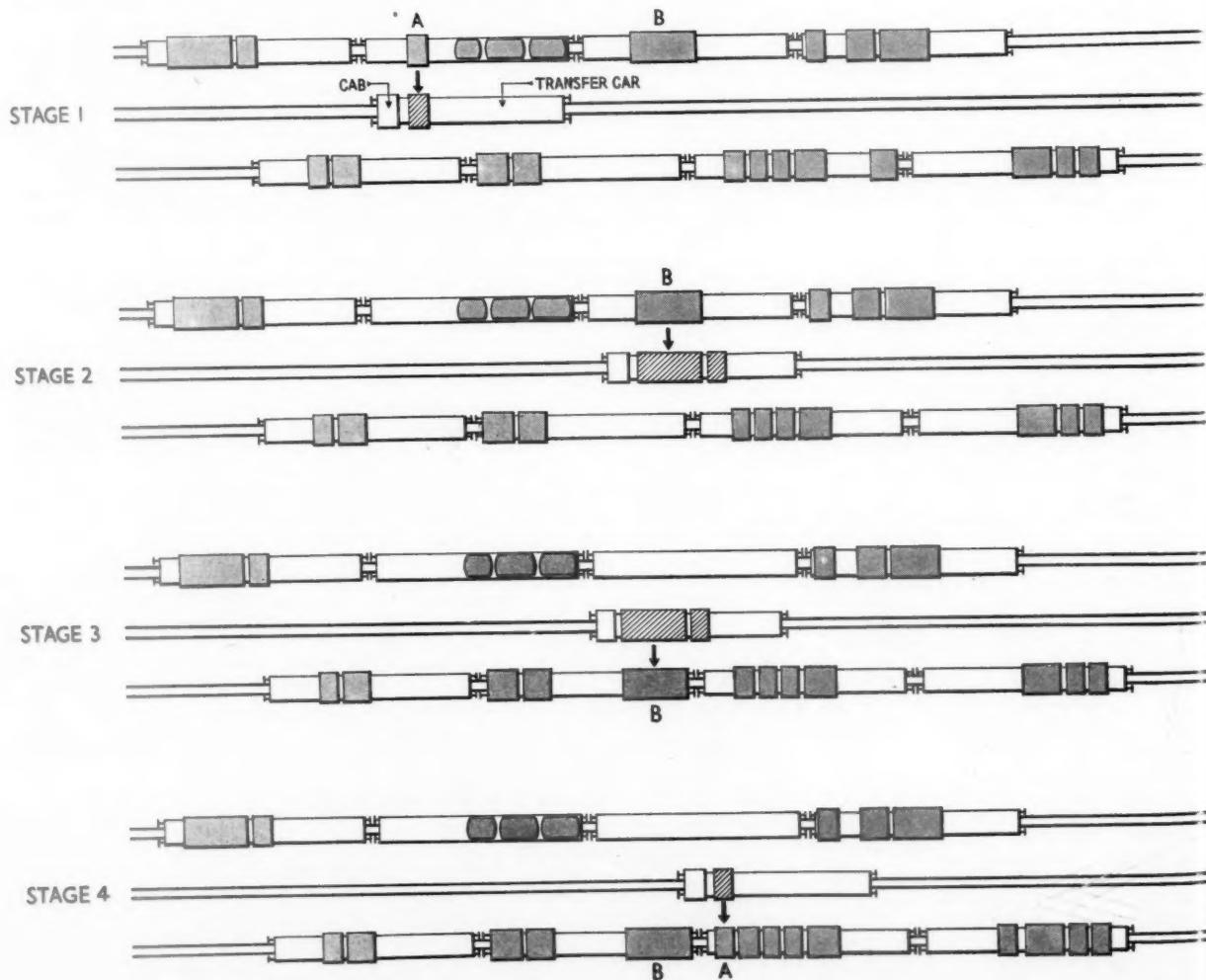


Fig. 2.—Transfer of containers "A" and "B" from one train to another, shown in four stages

way conditions, would not only go far to solve the road-rail transfer problem, but in addition, if the flat wagons were formed into set trains covering the country rather in the manner of intersecting conveyor belts, it might be feasible to move containers from train to train en route and so eliminate the disadvantage of shunting. If the capital and operating costs were low enough it should be possible to at least equal the flexibility and the standard of service of road haulage and to provide it at less cost.

Proposed System for General Merchandise

A new system, termed "containerisation" for the purposes of this article, is here assumed to be applied only to general merchandise on British Railways, but it can be adapted to most other goods traffic in Britain and overseas.

The containers can be transported on railway flat wagons or ordinary flat-platform road vehicles, or they may be stood on fixed stands whilst being loaded or unloaded or during sorting. The base of each container is one of a few standard sizes and has standard fittings such as mounting feet and locking gear. Lifting is from the base. The upper structure may be of any size and shape

within reason and the loading gauge. The railway wagons are specially constructed bogie flat vehicles, equipped with power brakes and screw-coupled into block trains to run on fast schedules separate from other traffic. Coupling and uncoupling are less frequent than in passenger train operation. Sorting or marshalling by shunting is unnecessary.

Containers Moved Sideways

The containers are moved sideways on or off the road or rail vehicle (or fixed stand) by a special key vehicle, the "transfer car," illustrated in Fig. 1, and the basis of the system. In essence it is a diesel-driven bogie wagon which carries several containers and is equipped with mechanism for moving one container at a time either on or off an adjacent vehicle or stand. It is about 60 ft. long, weighs about 25 tons light and 60 tons with a full load of containers and can travel at about 50 m.p.h. on the main line under its own power. One man can operate the transfer car without leaving his cab.

Fig. 2 shows the procedure for the transfer of two containers only, but the transfer car will normally be loaded to capacity before unloading commences.

The car stops alongside the container to be transferred, traverses it on to itself, and, after picking up other containers, runs alongside the first road or rail vehicle (or fixed stand) at which a container is to be deposited, and leaves it there. The container is moved from the transfer car to the other vehicle or vice versa in less than 10 sec.

Each block train has a loading list, compiled in the first place by the transfer car drivers at the start and kept up to date during the journey. Each flat wagon in a train has an easily seen serial number which the transfer car drivers use in conjunction with the loading list to identify individual containers.

Automatic Transfer of Containers

The method by which a container is traversed from a flat wagon (or road vehicle or fixed stand) on to the transfer car is shown in stages in Fig. 3. The car has two runways which can be extended laterally on one side or the other to form a bridge to support four small trolleys which actually carry the container.

The runways consist of three sections and are both mounted on a common sub-frame which can be raised or lowered or tilted slightly by hydraulic jacks to

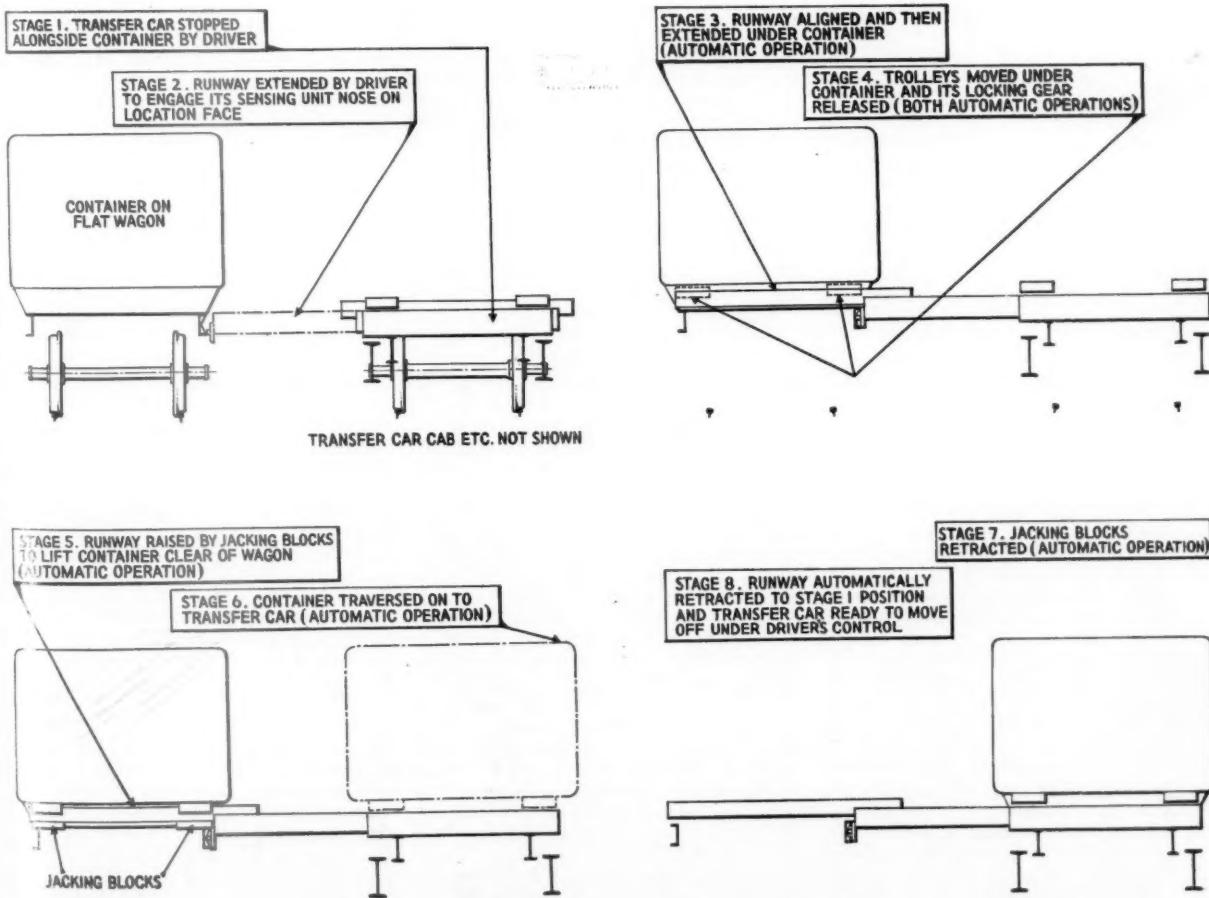


Fig. 3.—Stages in traversing container from flat wagon to transfer car

match variations in the level of the flat wagon. The centre section of each runway has a sensing unit at its end designed to engage with a location face on the wagon.

The driver initiates this engagement by stopping the transfer car so that when he partially extends the runway the sensing unit nose contacts the location face not more than 9 in. from its centre (stage 2 on Fig. 3). This is facilitated by rail movement of the car being controlled below about 6 m.p.h. by a single forward-stop-backward lever. The remaining operations shown in stages 3 to 8 on Fig. 3 are automatic and the container is moved entirely without shocks. The car is ready to move off again within 10 sec.

A necessary feature, not illustrated, is that one extending runway can be moved along the transfer car to suit the different

the possible strengthening of loading platforms and the erection of the cheap and simple fixed stands.

Train-to-Train Transfer

Whilst the transferring of containers from train to train may sometimes take place at depots it will usually be done elsewhere, corresponding to the present movement of wagons in marshalling yards.

The obvious choice for such a transfer point would be a set of sidings, either on their own or forming part of a much larger yard. Fig. 4 shows an example of the latter with two transfer cars working simultaneously on four block trains; the numbers of each may naturally be increased if more sidings are in use. Each transfer car can not only move containers between the two trains adjacent to it, but can also take a load on to the

mobile container park, made up of old four-wheel wagon underframes fitted with the standard container carrying gear, could be used to reduce the transfer car movements by being loaded up on one track and moved on to a siding adjacent to other trains for unloading.

Minimum of Fixed Equipment

The absolute minimum of trackwork needed for a transfer-point is shown in Fig. 5. The two tracks might well be running lines if other traffic is light enough to give an interval of, say, 20 min. for the block trains to stand close together whilst the transfer car is at work. If the trains cannot all be brought in at the same time a park would be essential.

Between these two extremes variations are possible. The flexibility of the system is shown by the manner in which a little-used piece of track can come to life

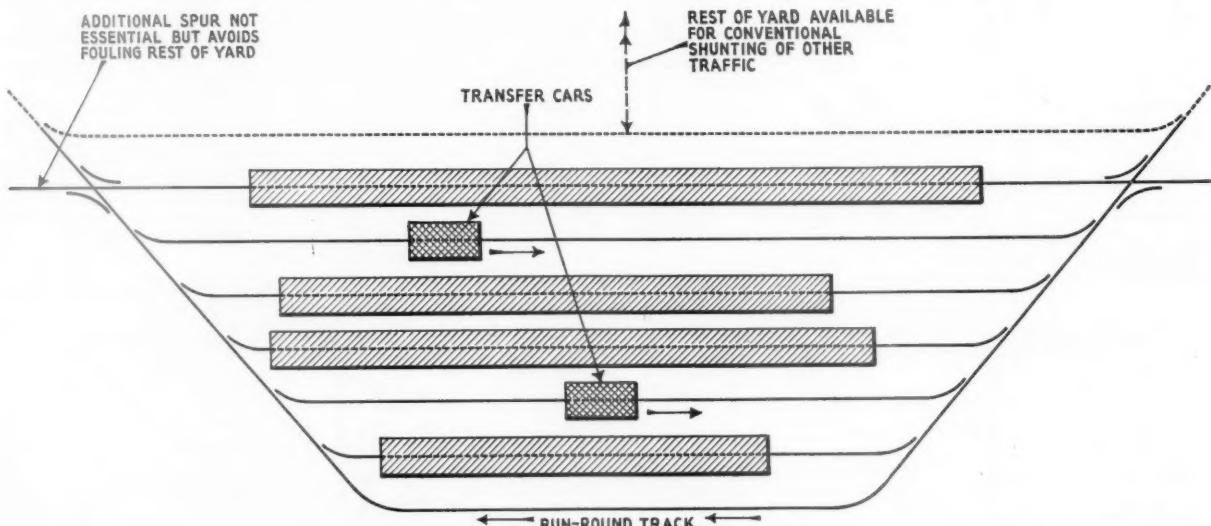


Fig. 4.—Transfer cars working on four trains at once, using part of yard as transfer point. No container park is shown

lengths of container and is positioned by pushing the appropriate button.

Because of their high productivity, relatively few transfer cars are needed to mechanise handling of traffic.

Road-Rail Transfer in Depots

The use of the transfer car to move containers between block trains and road vehicles needs little further explanation. The latter must have flat platforms and be fitted below with the indispensable location face. The block train can, if necessary, remain a considerable distance from the road vehicle, for the transfer car will quickly convey several containers at a time from one to the other.

Each depot has some fixed stands of steel or concrete where containers can be parked if they have to wait for the road or rail vehicle. This avoids immobilising the transfer car. When necessary, containers can be moved between road vehicle and fixed stand by a light type of runway which can be readily carried in sections by hand.

No alteration to layout in the depot or its sidings should be needed and civil engineering work should be restricted to

siding between the other two trains and work on them also. Whilst hardly justifiable for only two cars, one of the sidings is shown reserved as a run-round track to allow circulation on a one-way basis.

It might well be thought that even with the help of the train loading lists already mentioned, it would be inadvisable to have several transfer cars working simultaneously on several trains; but with loading lists and a simple set of rules developed on a model, the necessary procedure can soon be mastered and efficient operation should result.

The points in the yard can readily be arranged for operation by the transfer car drivers without leaving their cabs. A further saving in shunting staff accrues because couplings and brake pipes are already connected. When the transfer car has moved the last container the train can depart.

Several developments of the above are possible to suit different conditions. A container park of fixed stands can be placed alongside some of the sidings to permit containers being held for a time without detaining any flat wagons. A

as a transfer-point for, say, 30 min. every few hours. Furthermore, as no track alterations are necessary, such transfer-points can be moved to cover variations in traffic. Except when a container park is needed, all equipment is on wheels. No difficulties arise as regards staff, for they too are conveyed in wheeled vehicles, arriving and departing with the block trains and transfer car.

Block Train Services

As there is wide choice in the geographical location of transfer-points, scheduling of a suitable network of block train services should present little difficulty. Rather than trying to give each of the larger destinations its own train as at present, "Containerisation" traffic should generally be conveyed by the first train going in the required direction, so giving a more frequent service with far less than a *pro rata* increase in the number of trains run.

Only the use of the three main items of equipment has been mentioned, but many variations to suit particular conditions are perfectly feasible. For example, a combined locomotive and transfer car

could be provided for working feeder trains serving small depots. Container handling by crane or fork-lift truck might be justified in certain circumstances, provided that the advantage of the proposed method, of smooth, shockless transfer is not violated. Another variation could be the running of one or two flat wagons attached to a passenger train, a revival of the now-defunct mixed train.

Reliability of Equipment

The production of reliable equipment would necessitate the building and thorough testing of prototypes. The

when a better service is provided for the trader, and from the railway point of view, the carriage of almost all consignments, including even sundries, benefits. The present extra charge to the trader would not be needed.

Almost everything that can be carried in a normal-size road vehicle can just as well be loaded into a container. The main objective is the enormous volume of traffic now carried by ordinary road vehicles; the more awkward loads are never likely to be anything but a sideline.

To the objection that block trains will be partly empty on most of the stages of

provision of a service of the necessary quality demands the separation of such traffic from other goods traffic on all lines. Other objections, such as the question of private sidings, can be similarly countered.

The cost of all the new equipment would not be prohibitive. At £100—£150 million it would not be astronomical by the standards of British Railways modernisation plan and compares with the £156 million and £75 million respectively estimated for wagon building and the fitting of power brakes to existing stock. The present-day building cost

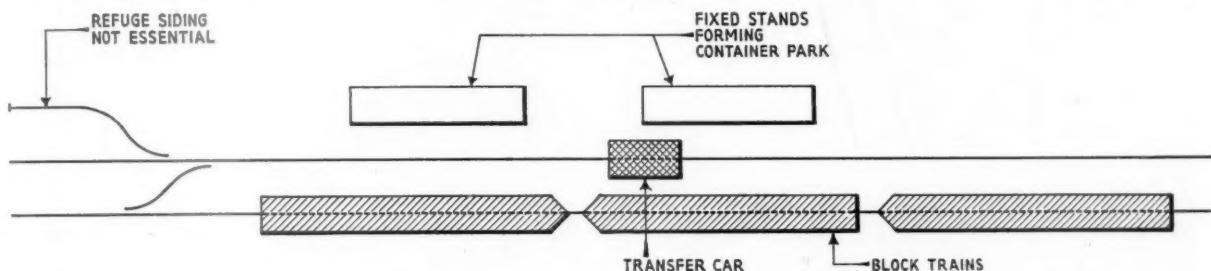


Fig. 5.—Minimum requirements for a transfer point. Container park is not essential if trains can all stand together at the same time

mechanism of the transfer car would probably be subjected to the equivalent of a year's operation (say, 300,000 on-off cycles) several times to eliminate any initial troubles. This would not be a quick process even with accelerated testing methods, but neglecting it would only ensure future trouble.

Possible Objections

It can be objected that use of containers has not stopped the fall in traffic, and that they cannot be used for all traffics. The answer is that, as used at present, the only real advantage afforded by the container is door-to-door service. Its potentialities are only fully realised if it is used as an integral part of the whole "containerisation" system,

the journey, the reply is that there are normally many unoccupied seats in a passenger train which nevertheless is remunerative to run. Such empty running, however, would probably necessitate the flat wagon brakes being of the automatic changeover empty-loaded type, but such more costly items could be justified for rolling stock used intensively.

It may be urged that running "containerised" traffic separately from other freight means more trains. On trunk lines in Britain most of the traffic already is run separately. Certain economies can be made if one train is run instead of two, but traders judge the service by factors other than "net ton-miles per train-engine hour" and the

of the superseded conventional stock would be greater than the outlay on equipment as suggested above.

The proposed method offers the means of converting the outstanding rail asset of bulk trunk haulage into true competitive power, using a form of mechanical handling which extracts the maximum results from rolling stock of given capital value. In addition, it makes use of existing trackwork and buildings to such an extent that many wayside station goods yards can once again become assets. Detail improvements are always possible, but because its basic principles together form the only completely logical solution to the general merchandise problem, there is no likelihood of the system being outdated by another method.

BRAZILIAN RAILWAY PAYMENT ORDER.—An order was made in the High Court of Justice on December 17, by consent, that £90,750 out of a fund of £565,000 in a special account with the Bank of London & South America, purchase price of the Brazilian railway and assets of the State of Bahia South Western Railway Company, was to be at the disposal of the Brazilian Government. The balance was to be distributed among the creditors of the railway company. Counsel for the Brazilian Government stated that his clients had initiated this motion, to be treated as the trial of an action by British Trusts Association claiming a declaration that the £565,000 was held by the bank on trust for the creditors of the railway company. He asked for an order by consent on undertakings by the defendants, who were the bank, Securities Agency, City Safe Deposit and Agency Company, and the railway company. The plaintiffs were trustees of prior lien debentures of the railway company. The railway was sold to the Brazilian Government in 1949. The Brazilian Government had paid the £565,000 into the account in June, 1949. Certain

sums were to be paid to the trustees for the debenture holders and to the trustees for the "A" mortgage debenture holders in accordance with a scheme. After the transfer the Brazilian Government was to deliver to the bank an irrevocable order to pay out the moneys under a scheme. The scheme was sanctioned by the court, but counsel for the Brazilian Government stated that the Government had never given the irrevocable authority mentioned in the agreement, and the creditors had never been paid their money.

NO INSUPERABLE OBSTACLE TO BUILDING CHANNEL TUNNEL.—The report by an international study group including representatives of the Channel Tunnel Company and Suez Canal Company, on the possibilities of the Channel Tunnel, is expected to be laid before the British and French Governments next month. It is stated to embody a finding that there is no insuperable engineering difficulty in building the tunnel. The cost of the scheme has been estimated at £100-120 million. The earliest date for starting the work is thought to be 1961. The report is based on

inquiries into the probable cost of construction, operating costs, inter-State trade and the views of a large sample of cross-Channel passengers. The proposed tunnel is understood to be for railway tracks only.

NORTH EASTERN REGION CHEAP DAY SINGLE FARES.—Special cheap day single fares have been introduced by British Railways, North Eastern Region, from Bradford to Huddersfield, Bradford to Halifax, and also Leeds City to Huddersfield and vice versa in each case. The new fares are: Bradford Exchange—Huddersfield 1s. 6d.; Bradford—Halifax 1s. 3d.; and Leeds City—Huddersfield 2s. 3d.

B.R.S. (MEAT HAULAGE) LIMITED TO TRADE DIRECT WITH CUSTOMERS.—B.R.S. (Meat Haulage) Limited has given notice to United Carriers Limited to terminate its contract with that company with effect from a date to be agreed. This date will be not later than April 30, 1960. The British Road Services Board of Management has agreed that subsequent to this date to be determined B.R.S. (Meat Haulage) Limited will operate and trade direct with its customers.

Restaurant Cars for British Railways

Layout of saloon and design of furniture ensure quick meal service. Space saved in planning storage



General view of saloon, looking towards pantry and kitchen. Note grab pole in screen and slatted shelves under chairs

A RECENT delivery by the Birmingham Railway Carriage & Wagon Co. Ltd. of unclassed restaurant cars is the first of a batch of restaurant and buffet cars for British Railways. The complete order is for 61 cars, made up of 19 unclassed restaurant cars, four first class restaurant cars, and 38 combined dining and buffet cars. The unclassed cars are designed primarily for accommoda-

dation of passengers during meal service only. The design of the seating and the wide gangway facilitate access to the seats at the tables.

Interior Décor

The décor, for which Sir Hugh Casson was the consultant designer, is attractive, and the finish throughout of a high standard. Various schemes of interior

finish and materials are being used for the dining saloon. Double-glazed windows are fitted in all cars.

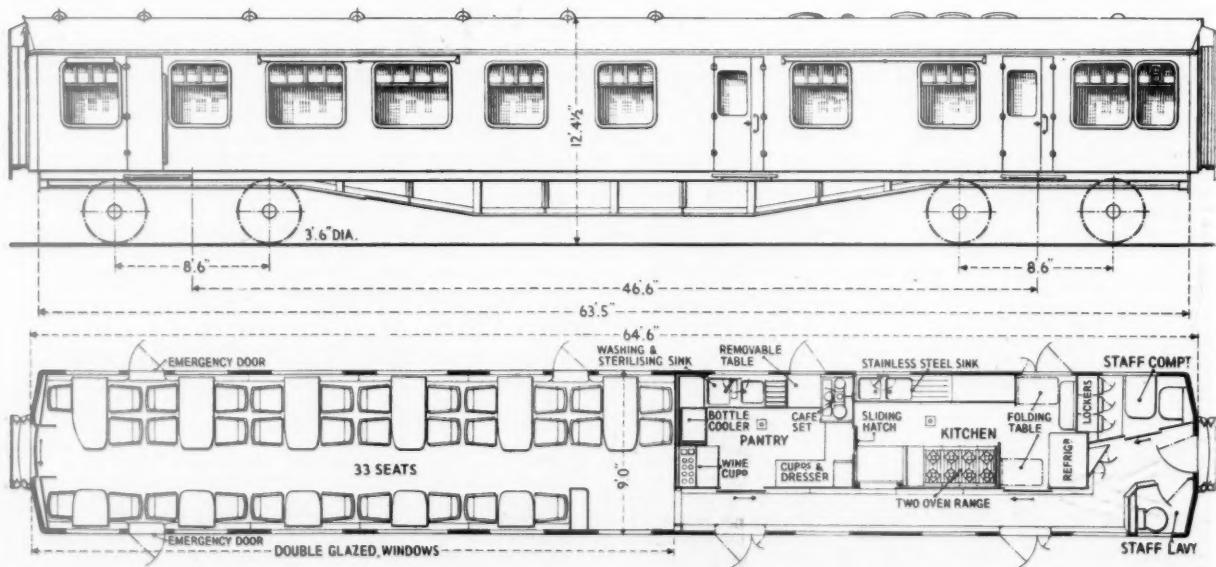
The saloon provides seating for 33 passengers. The spacious appearance is achieved largely by the extensive area of window and the wide gangway. Sound and thermal insulation is provided by Fibreglass wool in the roof, bodysides, and floor, and the Hallam Sleigh double-glazed window units with sliding ventilators above each double fixed glass. In the centre of the ceiling are seven combined lighting and ventilating fittings. A recessed ceiling light is fitted above each table. No parcel racks are fitted, as there is a slatted shelf for light articles in the base of each chair. The ceiling contour blends with a smooth line into the hinged pelmets which extend the full length of the saloon above the top of the windows.

Draught screens are fitted at the vestibule and at the service ends. Grab-poles are incorporated in each screen. A linen cupboard also is built into the screen at the service end. Above waist height this screen is glazed. The threshold of the service corridor floor into the saloon has been trimmed by a wide band of reeded black rubber. This is matched in width by an arch of polished timber.

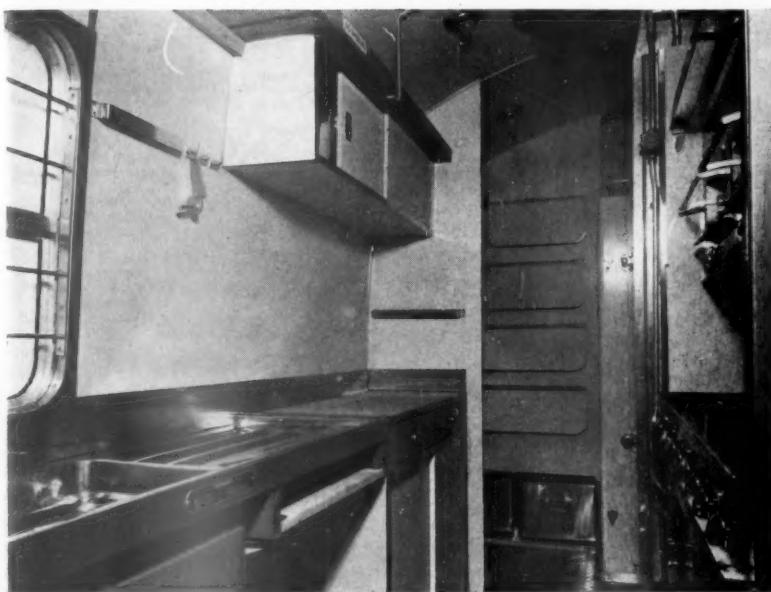
Heaters

Standard type heater covers are fitted along the bodyside. Exposed sections of the bodyside and partitions are protected by a reeded aluminium kicking strip extending to heater cover height.

Two schemes of interior finish are used for the saloon. One makes use of Warerite Stardust grey for the walls and



Elevation and plan of British Railways restaurant car built by the Birmingham Railway Carriage & Wagon Co. Ltd.



Kitchen from pantry end. Space is saved by hinged shelves in gangway and by pocket under seats in staff compartment

screens, and the other of Decorplast, Hopscotch, matt finish. In cars with the Stardust grey walls the chairs and window reveals are stained mahogany. For cars with the Hopscotch matt wall finish the timber mouldings and chair frames are Indian silver greywood. The ceilings are panelled in white Cobex. Curtains and carpet material and colouring are varied to blend with each scheme.

The car floor, which is $\frac{1}{2}$ -in. multi-ply, is laid on a 1-in. layer of Fibreglass, retained on the underside by a 20-g. corrugated aluminium sheet. The fitted carpet, with a $\frac{1}{8}$ -in. thick felt underlay, is arranged for easy replacement of the section in the main gangway.

Saloon Furniture

In the design of the chairs and tables close attention has been given to ease of entry and to minimum gangway obstruction. The chairs are shaped and upholstered to provide adequate comfort for the period of a normal meal service. This has been achieved with the minimum size of frame, closely shaped to the outline of the cushions. The single leg table support on the inside and the two bodyside supports are carried in resilient rubber mountings. Table tops are covered in black Vynide, with timber finish to match the chairs.

Pantry Fittings

Next to the saloon bulkhead is a wine cabinet and a J. E. Hall bottle-cooling unit. Aluminium bottle racks are fitted in the lower section of the wine cabinet and aluminium roller shutters at the front.

Cupboards with sliding doors are arranged above the cooler. Against the corridor partition is a full-height cupboard and dresser unit. Cutlery boxes are carried in a nest of drawers alongside the sliding hatch between the pantry and kitchen. Against the kitchen bulkhead is a Still's Café set for hot drinks, with

gas-heated boiler immediately below. All surfaces around the café set are faced in polished aluminium. Along the bodyside is a Stott's washing and sterilising

sink unit. Pantry ventilation is by one 9-in. Vent Axia fan and two roof ventilators.

Mouldings are in polished anodised aluminium and the ceiling is panelled with matt white Formica. The corridor is lined in grey linette Formica and the ceiling with white Cobex.

Kitchen Layout and Equipment

The kitchen is approximately 12 ft. 3 in. long. It is equipped with a Slaters two-oven range, twin-bowl Stott's stainless-steel sink unit, and a 20-cu. ft. capacity Frigidaire refrigerator. At each side of the range is a full-height partition, with the serving hatch on the right and the entrance door from the corridor on the left. A lift-up two-leaf folding table is fitted in the doorway and a similar table in the bodyside doorway.

Against the end bulkhead are the refrigerator and a bank of hinged shelves. At the base of this bulkhead is a pocket extending into the staff compartment. This houses the stainless steel vegetable containers.

Cupboard storage, which also forms a table top, is arranged alongside the sink unit, and a continuous overhead rack is fitted on this side of the kitchen. An emergency water-raising foot pump is carried under the sink unit.

Ventilation is by three 9-in. Vent Axia fans. A controllable fresh-air intake is fitted in the bodyside. The walls, ceiling,



Kitchen end of pantry, showing sliding hatch and café set in surround of polished aluminium

partitions, and working tops are faced with Formica, and the edges of all shelving are aluminium faced. The ceiling above the cooker is also lined with aluminium. Kynal aluminium tread-plate is used for the corridor, kitchen, and pantry floor, with aluminium coving. The main pipework is enclosed in stainless steel trunking. Two CO₂ gas type fire extinguishers are fitted in the kitchen and one CO₂ water type is fitted above a corner cupboard in the vestibule.

Staff Accommodation

The staff compartment is fitted with two upholstered bench seats, a folding table, and three personal lockers. An overhead timber-slat parcel rack is fitted on two sides of the compartment and a small cabinet on the rear bulkhead.

Across the corridor from this compartment is a staff lavatory. A Beresford folding metal wash basin is fitted above the toilet. The ceiling is panelled in off-white Cobex and the compartment sides in Formica grey linette, matt finish.

The floor is laid with Semtex tiles and polished mahogany is used for all exposed woodwork. In the staff compartment the finish is similar with the exception of the linoleum floor covering.

Two circular water tanks with a com-

bined capacity of 200 gal. are mounted in the centre of the frame. Stone's water raising equipment is used to supply the service tanks. Underslung at one side of the frame are the propane gas cylinder containers, and at the other side are the battery boxes and electrical control boxes. Next to the battery box are the condensing units for the refrigerator and bottle cooler.

The underframe is of the British Railways light type, mounted on heavy type bogies fitted with rubber vibro-insulators on the bearing springs.

Battery charging is by a 180-A. Stone's Tonum belt-driven dynamo. Pyrotex wiring is used throughout the kitchen and pantry.

Sub-contractors include the following:

Kitchen ranges	James Slater & Co. Ltd.	Carpet for floors	Carpet Mfg. Co. Ltd.
Wash-up and sterilising unit	James Stott & Co. Ltd.	Dunlopillo fillings	S. J. Stockwell & Co. Ltd.
Boiling water and coffee making equipment	W. M. Still & Sons Limited	Vynide for table tops	Dunlop Rubber Co. Ltd.
Refrigerators	Frigidaire Division of General Motors	Rubber packing	I.C.I. Limited
Decorplast	Holoplast Limited	Silentbloc mountings	Sorbo Limited
Aluminium alloy window units	Hallam Sleigh & Chesham Limited	Auxiliary bearing springs	Silentbloc Limited
Asbestos millboard	J. W. Roberts Limited	Bearing springs	British Tyre & Rubber Co. Ltd.
Weatherproof windows in doors	Beckett Laycock & Watkinson Limited	Wheels and axles	Steel Peep & Tozer Limited
Roof ventilators	Charles Roberts & Co. Ltd.	Axleboxes and bearings	Owen & Dyson Limited
Pantry Ventilation	Vent Axia Limited	Steel castings	Charles Roberts & Co. Ltd.
Aluminium floor plates	Imperial Chemical Industries Limited	Axlebox dust shields	F. H. Lloyd & Co. Ltd.
Paints	Dockers Bros. Ltd.	Vacuum brake equipment	S. Osborn & Co. Ltd.
Sliding doors	Beckett Laycock & Watkinson Limited	Vacuum brake piping	Yorkshire Lubricator Co. Ltd.
Millboard	Cape Asbestos Co. Ltd.	Passenger communication equipment	Consolidated Brake & Engineering Co. Ltd.
Formica	Formica Limited	Westinghouse Brake & Signal Co. Ltd.	Stewarts and Lloyds Limited
W.C. basins	Twyfords Limited	Indiarubber	Clyde Rubber Works Co. Ltd.
		Electrical equipment	J. Stone & Co. Ltd.
		Steam heating equipment	A. G. Wild & Co. Ltd.
		Anti-friction pads	British Belting & Asbestos Limited
		Blackheart malleable iron	Hale & Hale (Tipton) Limited
		Zinc sheets	Ash & Lacey Limited
		Bituminous solution	Bitulac Limited
		Phosphor bronze bars	Anti-Attrition Metal Co. Ltd.
		Roller shutters	Dennison Kett & Co. Ltd.
		Folding wash basin	James Beresford & Son Ltd.
		Table legs	Pel Limited
		Seat coverings	British Replin Limited
		Cable trunking	Fuse Wholesales Limited
		Combined ceiling light and vent fitting	Donovan Electrical Co. Ltd.
		Water tanks	Charles Roberts & Co. Ltd.
		Cables	Pyrotex Limited
		Ceiling panels	Insulation Equipments Limited
		Flooring	Semtex Limited

Ignitron Electric Locomotives for Indian Broad-gauge Lines

2,840-h.p. design for goods and passenger traffic

THE Indian Railway Board, consequent on its decision to adopt 25 kV., 50 cycles, as the system for electrification of the Eastern and South Eastern Railways broad-gauge lines west of the Howrah (Calcutta) Burdwan suburban

lines, which are electrified at 3,000 V. d.c., ordered in August, 1957, 100 ignitron locomotives from the Groupement d'Etude et d'Electrification des Chemins de Fer en Monophasé 50 Hz. The order was divided between the members of the

group : Ateliers de Constructions Electriques de Charleroi; (A.C.E.C.), in Belgium; Alsthom and Matériel de Traction Electrique (M.T.E.) in France; Brown Boveri and Oerlikon in Switzerland; A.E.G. and Siemens in Germany. The mechanical portions were built by S.A. La Bruxoise et Nivelles in Belgium, by Krupp and Krauss-Maffei in Germany, and by Alsthom and S.F.A.C. in France.

The locomotives are designed for goods and passenger service. The former includes haulage of mineral and coal trains in the coalfields and steel-producing areas in Bengal and Bihar.

The principal characteristics are as follow:—

Gauge	5 ft. 6 in.
Wheel arrangement	Bo-Bo
Continuous rating	2,840 h.p.
Top speed	80 m.p.h.
Maximum tractive effort	32,480 lb.
Starting torque	50,400 lb.
Speed at continuous rating of traction motors	33 m.p.h.
Weight	75 tonnes

To maintain regularity in delivery of 15 locomotives a month, assembly of components supplied by members of the Groupement d'Etude is being carried out by the Belgian, French, and German concerns.

The locomotive shown in the illustration was assembled in Belgium and shipped from Antwerp.



Broad-gauge ignitron locomotive for Indian State Railways built by the Groupement d'Etude et d'Electrification des C. de F. en Monophasé 50 Hz.

RAILWAY NEWS SECTION

PERSONAL

Mr. Albert Kunz has been appointed Manager, Swiss National Tourist Office & Swiss Federal Railways, London. For the past 10 years he has been Publicity Manager in London. He succeeds Mr. Henry Ernst, an illustrated biography of whom was published in our December 18 issue.

Sir George H. Nelson, Bt., Chairman of the English Electric Co. Ltd., who has been

Advisory Council : in 1944, a member of the Percy Committee on Higher Technological Education ; and, in 1945, Chairman of the Government Census of Production Committee. In that year he assisted in the deliberations of the Government Committee on Future Scientific Policy. A knighthood was conferred on him in 1943 and a baronetcy in 1955. A member of the Grand Council of the Federation of British Industries, he was President of that body from 1943 to 1945. He is a Governor of Queen Mary

Electrical Engineer, Scottish Region, British Railways. This appointment is part of the reorganisation which combines under one officer, the present Mechanical & Electrical Engineering and Carriage & Wagon Engineering Departments.

Mr. L. J. Dunnett, C.B., C.M.G., Permanent Secretary to the Ministry of Transport, who has been awarded a K.C.B. in the New Year Honours List, was educated at the Edinburgh Academy and University



*Sir George H. Nelson, Bt.,
Chairman, English Electric Co. Ltd.,
awarded a Barony*



*Mr. L. J. Dunnett
Permanent Secretary to Ministry of Transport,
awarded a K.C.B.*

awarded a Barony in the New Year Honours List, received his early training at the City & Guilds Technical College, London, and has since been made a Fellow of the College. He was awarded the Mitchell Exhibition and a post-graduate Brush scholarship, and became a premium pupil of the Brush Electrical Engineering Co. Ltd. At the age of 22 he was appointed that company's Chief Outside Engineer. He later joined the British Westinghouse Company (now Metropolitan-Vickers Electrical Co. Ltd.), and, by 1920, had established and became Manager of that organisation's Sheffield works. His association with the English Electric Co. Ltd. began in 1930, when he became Managing Director. Three years later he was appointed Chairman. During the war, and in addition to his work as Chairman of the English Electric Co. Ltd., Sir George Nelson was a member of the Heavy Bomber Group Committee of the Air Ministry and, in 1942, he was Chairman of the United Kingdom Tank Mission to America and Canada. In 1943 he became a member of the Reconstruction Joint

College (University of London) and a Member of the Governing Body of that institution, an Honorary Member and an Honorary Fellow of the Imperial College of Science & Technology. Sir George Nelson was President of the Institution of Electrical Engineers, 1955-56, and President of the Institution of Mechanical Engineers, 1957-58. He was appointed Vice-President of the City & Guilds of London, in December, 1958. He has been President of the Locomotive & Allied Manufacturers' Association of Great Britain since February, 1958. Sir George Nelson relinquished the position of Managing Director of the English Electric Co. Ltd., while remaining Executive Chairman of the company, in 1956.

Mr. C. F. H. Carson has been appointed a Director of the Canadian Pacific Railway Company to fill the vacancy created by the death of Mr. George A. Walker.

Mr. J. J. Finlayson, Mechanical Engineer (General), British Railways Central Staff, has been appointed Chief Mechanical &

College, Oxford. Mr. Dunnett entered the Civil Service, in the Air Ministry, in 1936. In 1945 he transferred to the Ministry of Civil Aviation, being promoted Assistant Secretary, in 1946, and Under Secretary in 1948. In 1951 he transferred to the Ministry of Supply and, in 1953, was promoted to be Deputy Secretary, transferring to the Ministry of Transport & Civil Aviation in 1958. He became Permanent Secretary to the former Ministry of Transport & Civil Aviation in February last year. He was created C.M.G. in 1948, and C.B. in 1957.

Mr. E. S. Little has retired from the board of the British Thomson-Houston Co. Ltd., and certain associated companies.

Mr. James V. Ramsden has been appointed Secretary of the Railway Rolling Stock Manufacturers' Association of Australia, in place of the late Mr. W. F. Marien. Mr. Ramsden is also Secretary of the Export Division of the Chamber of Manufacturers of New South Wales, as well as Public Relations Officer for the Chamber.

Mr. A. C. Parker, Assistant (Wages Staff) to the Regional Establishment & Staff Officer, Western Region, British Railways, has been appointed Assistant Regional Establishment & Staff Officer.

Mr. J. R. Farquharson, C.B.E., B.Sc. (Glasgow), M.I.C.E., General Manager, East African Railways & Harbours, who has been awarded the K.B.E., in the New Year Honours List, is 56. He attended the Royal Technical College, Glasgow, graduated B.Sc. at Glasgow University and obtained a diploma of the Royal Technical College in 1923. From then until 1925 he was Junior

& Harbours, in October, 1957. Mr. Farquharson was awarded the O.B.E. in 1944 and the C.B.E. in 1948.

Mr. Graham H. Bird, General Manager, Transport Brakes Limited, has been appointed Managing Director.

Mr. F. B. Harvey, former General Traffic Manager & Deputy Railways Commissioner, South Australian Railways, who has been awarded the O.B.E., was born in 1894. Mr. Harvey began his career in the Resident Engineer's Office, Quorn, in 1908, and was transferred to the Post Office, 1908-10.

System on the Central Australian Line. On return to Adelaide, he was loaned (July-October 1943) to the Commonwealth Land Transport Board, Brisbane, and took charge of train operations in connection with transfer between standard-gauge and narrow-gauge lines. He was made Assistant to the General Traffic Manager, in 1950, and later became General Traffic Manager. He was appointed in addition Deputy Railways Commissioner in June, 1955. He became Chairman of the Appendix Committee and of the Rule Book Committee in 1953. Mr. Harvey was Junior Vice-President, South Australian Railways Institute, and became Senior Vice-President



Mr. J. R. Farquharson

General Manager, East African Railways & Harbours,
awarded the K.B.E.



Mr. F. B. Harvey

General Traffic Manager & Deputy Commissioner,
South Australian Railways, awarded O.B.E.

Assistant Engineer in the Western District, Lowland Division, Glasgow, L.M.S.R. In 1925 he was appointed Assistant Engineer, Kenya & Uganda Railways, and later became Senior Assistant Engineer. In 1937 Mr. Farquharson was appointed Personal Assistant to the General Manager, Tanganyika Government Railways, and in 1941 became Chief Engineer. From June, 1941, to August, 1942, on a part-time, and from August, 1942, to November, 1945, on a full-time basis, he was seconded for work in the operation of wartime controls in Tanganyika. In 1945 he was made General Manager of the Tanganyika Government Railways. From May 1, 1948, the undertakings of the Kenya & Uganda Railways & Harbours and the Tanganyika Railways & Port Services were amalgamated to form the East African Railways & Harbours, of which he at first became Acting Deputy General Manager, and in 1949 became Chief Engineer and Deputy General Manager. He was appointed General Manager of the Sudan Railways, in 1952, and took up his duties as General Manager, East African Railways

He joined the Chief Engineer's Office, South Australian Railways, in 1910, as Junior Clerk, Clerk and later became Personal Clerk, to the Chief Engineer. He was appointed Chief Clerk, Peterborough Division, in 1923 and, in 1924, became Train Controller, Adelaide. In 1926, he was loaned to the Victorian Railways during the introduction of the Train Control System. He later studied railways in South Africa, Rhodesia, Kenya, several countries in Europe (including the United Kingdom), Canada and the United States. In 1934 he was appointed Assistant Superintendent Transportation, Murray Bridge and was loaned to the New South Wales Railways, to assist in the introduction of Telephone Train Control System. In 1935 he was appointed Freight Agent, and subsequently became Special Officer to the Railways Commissioner and Special Officer & Assistant to General Traffic Manager. In 1942 he became Superintendent, Adelaide, a position held for 7½ years. In April, 1943, Mr. Harvey was loaned to the Commonwealth Railways to inaugurate the Train Control Train Order

in 1953, and President in 1955. He has served on all committees of the Institute as a member and as Chairman. For many years he was also President of the Adelaide Station Social Club. Mr. Harvey retired last year, as recorded in our June 6 issue.

We regret to record the death, on December 31, of Mr. William Dixon, a Partner, since 1937, in the firm of Messrs. Merz & McLellan. He was for many years the Senior Partner at the firm's Newcastle-on-Tyne office.

Mr. George Simpson has been appointed Assistant Chief of Police, British Transport Police, Glasgow Scottish Area. He succeeds Mr. B. L. D. Lincoln, who is now Assistant Chief of Police, Southern Area. Mr. Simpson has been Police Superintendent at Edinburgh since May, 1956. He joined the former London & North Eastern Railway Police in 1926. With the exception of a two-year period in England, he has served in all ranks in Scotland, having been stationed at Dunfermline, Dundee, Aberdeen and Glasgow.



Mr. E. R. Brown
Appointed Works Manager, Crewe,
L.M. Region



Mr. W. R. G. A. Haynes
Appointed District Operating Superintendent,
Euston, L.M. Region



Mr. G. W. Anson
District Operating Superintendent, Glasgow
(South), Scottish Region, 1955-59

Mr. E. R. Brown, M.I.Mech.E., M.I.Loco.E., Works Manager, Horwich, London Midland Region, British Railways, who, as recorded in our November 6 issue, has been appointed Works Manager, Crewe, began his railway service as an apprentice at Derby Locomotive Works in 1924. Following experience in the Locomotive Drawing Office, he was transferred, in 1931, to the Chief Mechanical Engineer's Headquarters at Euston, where he became Personal & Technical Assistant to the Chief Mechanical Engineer. In January, 1941, Mr. Brown was appointed Chief Inspector (Aircraft) Locomotive Works, Derby, and, 11 months later, Assistant to Works Superintendent (Inspection) in the same Works. He was appointed Assistant Works Manager, Horwich, in 1946 and moved to Crewe in a similar capacity in 1948. In 1956 he was appointed Works Manager, Horwich, the position he leaves for his new appointment. Mr. Brown is a member of several technical committees of the British Standards Institu-

tion and has taken part in several international conferences on standardisation. He is a Member of Council of the Institution of Locomotive Engineers, also Member of Committee of Manchester Centre of Institution of Locomotive Engineers. In 1956 was awarded "The Alfred Rosling Bennett Award" for a paper on "Limits and fits from the railway point of view." Mr. Brown is President of Horwich Mechanics Institute and a Governor of the Manchester College of Science & Technology.

Mr. W. R. G. A. Haynes, Freight Assistant to the Line Traffic Manager, Liverpool Street, Eastern Region, British Railways, who, as recorded in our November 6 issue has been appointed District Operating Superintendent, Euston, London Midland Region, entered the railway service as a junior clerk at Woodford in 1921. After operating experience at various places, he was appointed Controller at Kings Cross in 1940. Subsequently he held similar

positions at Nottingham and Manchester, before returning to London, in 1942, where he was attached to the Superintendent's Office, Marylebone. The following year Mr. Haynes was appointed Chief Trains Clerk & Chief Controller, Doncaster, and later held similar positions at Gerrards Cross and Liverpool Street. Since 1951 Mr. Haynes has been successively Assistant District Operating Superintendent at Derby, Gloucester and Manchester. In 1957 he was appointed Freight Assistant to the Line Traffic Manager, Liverpool Street.

Mr. G. W. Anson, M.B.E., A.M.Inst.T., District Operating Superintendent, Glasgow (South), Scottish Region, British Railways, who, as recorded in our December 4 issue, has retired, joined the former North Eastern Railway at Hull in 1912. After clerical experience at Hull Docks and service with H.M. Forces in Egypt, France and Belgium, Mr. Anson worked in Train and Traffic Control offices at Hull, York, Sunderland and New-



Mr. R. A. Savill
Appointed District Commercial Officer, Sheffield,
Eastern Region



Mr. James R. McBeath
Appointed District Traffic Superintendent,
Ayr, Scottish Region



Mr. W. Dendy
Appointed Assistant District Passenger Super-
intendent, Newcastle, N.E. Region

castle for ten years. He subsequently became: Assistant Yardmaster, Hull; Traffic Agent & Stationmaster, Tyne Dock; Goods Agent & Yardmaster, West Hartlepool; Goods Agent & Yardmaster, Gateshead; Yardmaster, Hull; and Acting Assistant District Superintendent, Newcastle. In 1946 he became Stationmaster, York, and in 1949 Assistant District Operating Superintendent, Hull. Mr. Anson was appointed Assistant to Operating Superintendent, Scottish Region in 1950. From February 1954 he occupied temporarily the position of District Operating Superintendent, Glasgow, and on the re-organisation of districts was appointed District Operating Superintendent, Glasgow (South) in February, 1955.

Mr. R. A. Savill, E.R.D., A.M.Inst.T., Assistant to the Commercial Officer (Mineral) York, North Eastern Region, British Railways, who as recorded in our December 4 issue, has been appointed District Commercial Officer, Sheffield, Eastern Region, was educated at Charterhouse. In 1939, he was about to enter Oriel College, Oxford, but volunteered for military service and was shortly afterwards commissioned in the Cheshire Regiment, with which he later served in North Africa and Italy, attaining the rank of Major. In 1946, he joined the Southern Railway as a Cadet. After three years training in all departments, he occupied various positions at Southern Region Headquarters, Waterloo, before transferring to York, in 1951, in charge of the Freight Commercial Research Section, North Eastern Region. In 1953, after acting temporarily as Assistant District Commercial Superintendent, York, for nine months, Mr. Savill was appointed Passenger & Parcels Agent, York station. In 1955 he returned to North Eastern Region Headquarters, and a year later was appointed Assistant to Commercial Officer (Mineral) the post which he now vacates. Mr. Savill rejoined the Army Emergency Reserve (Transportation branch) on its reformation in 1948 and now commands 19 Railway Regiment, Royal Engineers (A.E.R.), (Eastern & North Eastern Regions), with the rank of Lt.-Colonel. From 1951 to 1957 he lectured in transport subjects at York Technical College evening classes. He is a member of the Examinations Committee of the Institute of Transport, a member of the Institute's Yorkshire Section Committee, and a member of the Transport Advisory Committee to the Yorkshire Council for further Education. He is an Associate of the Institution of Railway Signal Engineers, and a Fellow of the Permanent Way Institution.

Mr. James R. McBeath, who, as recorded in our November 20 issue, has been confirmed as District Traffic Superintendent, Ayr, Scottish Region, British Railways, became Assistant District Traffic Superintendent, Ayr, in 1956, subsequently occupied temporarily the position of District Traffic Superintendent, Ayr. Mr. McBeath joined the former London & North Eastern Railway as a clerk at Twechar station in 1935. Having served at a number of stations, he joined H.M. Forces during the 1939-45 war. He was appointed a Traffic Apprentice in 1947, and having completed a course of training took up a position in the Commercial Superintendent's Department, Glasgow. In 1951 he became Goods Agent, Govan, and the following year he returned to the Commercial Superintendent's Office, Glasgow, where he was successively Clerk-in-Charge, Branch Lines Section; Chief Development Clerk, and Deputy Sales Assistant.

Mr. W. Dendy, Assistant to the District Operating Superintendent, Newcastle, North Eastern Region, British Railways, who as recorded in our December 4 issue, has been appointed Assistant District Passenger Super-

intendent, Newcastle, was educated at Oundle School and Clare College, Cambridge, where he took an Honours Degree in History and Law. From 1941 to 1946 he served in the Royal Corps of Signals, attaining the rank of Major. On demobilisation in 1946 Mr. Dendy joined the London Midland & Scottish Railway as a Traffic Apprentice and, after a period of training, was appointed Goods Agent, Cheltenham, in 1949. Two years later he became Goods Agent at Workington. In 1953 he moved to the North Eastern Region as Passenger & Parcels Agent, Sunderland, and in 1957 was appointed Head of the Development Section, District Goods Superintendent's Office, Newcastle. Later the same year he became Assistant to the District Operating Superintendent, Newcastle, the position he relinquished to take up his present appointment.

The New Year Honours List

The following is a selection of New Year Honours of transport and industrial interest:

Baron

Sir George H. Nelson, Chairman, English Electric Co. Ltd.

Privy Councillors

Mr. J. D. Profumo, Parliamentary Secretary, Ministry of Transport & Civil Aviation, 1952-53.

Sir Roy Welensky, Prime Minister, Federation of Rhodesia & Nyasaland; Minister of Transport, Communications & Posts, 1953-56.

Companion of Honour

Mr. A. T. Lennox-Boyd, Minister of Transport & Civil Aviation, 1952-54.

Baronet

Mr. G. R. H. Nugent, Joint Parliamentary Secretary, Ministry of Transport & Civil Aviation, 1957-59.

K.C.B.

Mr. L. J. Dunnett, Permanent Secretary, Ministry of Transport.

K.B.E.

Mr. J. R. Farquharson, General Manager, East African Railways & Harbours Administration.

C.B.E.

Mr. S. C. Bond, President, Traders Road Transport Association Limited.

Mr. G. H. Carruthers, Assistant Secretary, Board of Trade.

Mr. D. D. Cruickshank, General Manager, Renfrew, Dalmuir & Dumbarton Works, Babcock & Wilcox Limited.

Mr. L. J. Davies, Director of Research & Education, British Thomson-Houston Co. Ltd.

Mr. C. A. Dove, Chairman & General Manager, Nigerian Ports Authority.

Mr. G. E. Tonge, Managing Director, Hay's Wharf Limited.

O.B.E.

Mr. A. E. Baker, Senior Engineer, Crown Agents for Oversea Governments & Administrations.

Mr. F. B. Harvey, lately General Traffic Manager & Deputy Railways Commissioner, South Australian Railways.

Mr. G. F. Reader, Senior Engineer, Midlands Division, Ministry of Transport.

Mr. J. P. Young, Divisional Manager, Scottish Division, British Road Services.

M.B.E.

Mr. A. B. Apperly, Higher Executive Officer, York Traffic Area, Ministry of Transport.

Mr. E. A. H. Bolton, Higher Executive

Officer, Crown Agents for Oversea Governments & Administrations.

Lt.-Colonel M. D. Burns, lately Senior Technical Assistant, Ministry of Transport & Works, Northern Rhodesia.

Mr. J. F. Harris, lately Clerical Officer, Ministry of Transport.

Mr. R. E. Knowles, Senior Engineer, Survey, Ministry of Transport.

Mr. G. Smith, District Signal Assistant (York District), Signal Engineer's Department, North Eastern Region, British Railways.

Mr. E. A. Stanley, Permanent Way Inspector, East African Railways & Harbours Administration.

B.E.M.

Mr. F. A. Geddis, Turner, Locomotive Works, Eastleigh, Southern Region, British Railways.

Mr. G. Graves, Chief Dock Foreman, British Transport Docks, Garston.

Mr. R. G. Harris, Chief District Inspector, Swansea, Western Region, British Railways.

Mr. I. A. Udoddy, Clerk, Grade VI, East African Railways & Harbours Administration.

Queen's Police Medal for Distinguished Service

Mr. W. W. Wood, Chief of Police, Western Area, British Transport Commission.

The Board of Management for British Transport Docks has been reconstituted with effect from January 1, when Mr. W. Mackenzie retired. Sir Robert Letch remains Chairman of the Board and General Manager of British Transport Docks. Other Members of the Board will be: Mr. Trevor L. Davies, Chief Financial Officer, British Transport Docks, H.Q.; Mr. Sidney A. Finnis, Chief Docks Manager, Southampton; Mr. William Jeffers, Chief Docks Manager, South Wales; Mr. Thomas S. Roberts, Chief Docks Manager, Hull. Mr. J. Taylor Thompson, formerly Chief Civil Engineer of the London Midland Region, British Railways, has agreed to serve as a part-time Member of the Board.

Brigadier C. H. Barnett, Director of Transportation, War Office, has retired.

Mr. Michael G. H. Brown has been elected Chairman of the Universal Grinding Wheel Co. Ltd. in place of Sir Samuel Beale, who left the chair after the annual meeting, but will continue as a Director.

Mr. T. C. Hughes has been appointed European Passenger Manager Canadian Pacific Railway, and not European Traffic Manager, as recorded in our December 11 issue.

B.T.C. APPOINTMENTS

The British Transport Commission announces the following appointments:—

Public Relations Adviser's Department

Mr. A. W. Knight, Assistant, as Senior Feature Writer, Public Relations Division.

Mr. B. D. Chapman, British Broadcasting Corporation, as Television & Radio Assistant, Public Relations Division.

Mr. J. H. Harris, Press Association, as Feature Writer, Public Relations Division.

Mr. R. W. Drummond, 4D Associated Limited, as Feature Writer, Public Relations Division.

British Railways Research Department

Mr. T. Baldwin, Superintendent, Engineering Division, Derby, as Assistant Director, Engineering Division, Derby.

Mr. D. L. Bartlett, Assistant, Technical Development (Modernisation), Chief Civil Engineer's Department, Paddington, Western Region, British Railways, as Assistant Director, Engineering Division, Derby.

NEW EQUIPMENT AND PROCESSES



Oil Mist Spray Equipment

THE M.3892 is an oil mist unit for the application of cutting oils. It enables soluble or neat coolants to be fed to the workface in circumstances where surface speed normally makes dry machining necessary. It functions by delivering a fine mist of coolant in a stream of compressed air.

The unit operates at 10-20 lb. per sq. in. and consists of three major components; a porous bronze filter element, a pressure-reducing valve complete with gauge to indicate the reduced air pressure, and an Ayrlyne lubricator with flow adjustment.

The lubricator embodies a $\frac{1}{2}$ or 1-pt. transparent oil reservoir with needle regulating valve controlling the oil flow. The ratio of oil to air can be regulated by a screw at the top of the lubricator.

The unit is suitable for use with neat cutting oils of a viscosity not exceeding 300 Redwood seconds at 70 deg.F. or with soluble oil emulsions. Price with $\frac{1}{2}$ -pt. capacity lubricator is £12 11s. 3d.; with 1-pt. capacity lubricator, £13 12s. 3d.

Further details can be obtained from the manufacturer, Wakefield Dick Industrial Oils Limited, Castrol House, Marylebone Road, London, N.W.1.

Tractor Developments

TWO new developments in the tractor field have been announced. They are the D6C towing winch, available in standard and low-speed models, and a power-controlled towing winch for installation on the manufacturer's Caterpillar D8 and D9 tractors.

Easier shifting and longer control cable life are claimed for the D6C through a constant-mesh transmission using a jaw clutch engagement spring. Gear arrangement has been simplified, and all gears are cut from special alloy steel and heat-treated. Other features include high-speed reverse, and new brake and clutch levers. Line speeds can be as low as 23 ft. per min.

Optional equipment includes a free-spooling group to convert the standard winch to one with a free-spooling drum; cable guide rolls, fairlead, and automatic brake.

The power-controlled towing winch features a hydraulic control system and is available in standard and low-speed models. It can be installed on Series D Caterpillar D9 tractors, and Series D through H tractors in the D8 line, with direct or torque converter drive transmissions. The redesigned controls require only 8 lb. of effort. Automatic

brake release is provided by a single lever, and an inching brake lever gives precise control when lowering the load. A gear-type hydraulic pump is driven by the tractor lay shaft. Winch transmission oil, screened through a vacuum-type filter, is used in the hydraulic control system, actuating a pair of multiple-disc, oil-cooled clutch units. No adjustment is required during the life of the clutch units. The self-energising differential brake requires only infrequent adjustment. This winch can be operated any time

choice of standard, fixed, or swivelling drawbar.

Further details can be obtained from any Caterpillar-Hyster dealer or from the Hyster Company, P.O. Box 328, Peoria, Illinois.



the tractor engine is running, independent of tractor clutch, so that winching can be carried out while the tractor is moving. For jobs which require high-line pulls and low-line speeds the power-controlled D89A Lo-Speed towing winch is available. The new winches team with the recently-introduced Lo-Speed winches with conventional controls, providing a full selection of models to adapt Cat D8 and D9 tractors to any application requiring a tractor-mounted winch. Available options include cable guide rolls and a fairlead assembly and

Eye Protection

THE "Itex" Cromospec offers maximum eye-protection, modern design and light weight. Its chromium-plated frame will not corrode or rust and a plastic sweatband allows maximum ventilation and prevents lens-misting.

Interchangeable lenses are manufactured from shatterproof acetate. The curved lens affords protection from every angle, and is easily replaced. Green anti-glare lenses are also available. A new type of adjustable spring hinge provides snug fit. The plastic covered side-arms are also adjustable.

Price is 11s. 6d. Replacement lenses are 2s. 11d. Delivery is ex-stock.

Further details can be obtained from the manufacturer, the Safety Service Co. Ltd., "Itex" House, Wendover Road, Harlesden, London, N.W.10

Potato Peeler

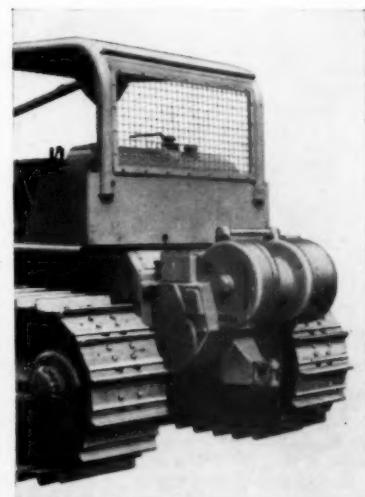
THE Victoria VB6 and VB14 potato peelers have been re-styled and their cleaning now takes only a matter of moments. Weight also has been reduced. As before, the VC14 and VC7 take a 14-lb. and 7-lb. charge of potatoes respectively. Speed of peeling remains the same at 60 sec. Peeling time control equipment is available as an optional extra. The new models are produced for bench operation and pedestal types (VK7 and VK14) are available to varying heights.

Further details can be obtained from the manufacturer, the Imperial Machine Company, Victoria Works, Edgware Road, Cricklewood, London, N.W.2.

Lubricator

MOLYSIL 33 is an aircraft lubricant for which an improved re-lubrication period is claimed.

Further details can be obtained from Rocol Limited, through the Molyspeed





Corporation, 880, Bloomfield Avenue, Cliff-ton, New Jersey, U.S.A., Rocol (Continental) A-G., Horgen, Switzerland, and 26 national agents in Canada, Australasia, the Near and Far East, Africa and elsewhere in the world.

Fast-Travel Crane

THE Jones 10-ton KL 10-10 "Fast-Travel" mobile crane is to be replaced by a modified machine having a 12½-ton capacity. It will be known as the Jones KL 10-10 Mk. III.

Modifications include a completely redesigned driver's cab which is off-set on the off side. Of the two driving positions provided, one faces forward for road travel, and the other faces the rear. This position is equipped with simplified "finger-tip" crane controls and duplicate travel controls arranged as in standard automotive practice. The crane can be supplied with strut or cantilever-type jib, and the latter can be lowered on a bolster set beside the cab so that overall height is reduced when travelling.

Maximum load rating has been increased from 10 to 12½ tons lifted at 10 ft. rad. This capacity is available in the blocked condition, using the outrigger beams and jacks fitted to the chassis. The maximum load that can be handled free on wheels is 7 tons, again at 10 ft. rad.

A power lowering system has been adopted as standard. This system permits the braking action of the engine to give smooth and steady lowering at speeds infinitely variable down to a matter of a few inches per minute.

The crane is powered by Leyland 0600 water-cooled diesel engine developing 125 h.p. at 1,800 r.p.m. Hoisting speed is 100 ft. per min. on single fall of rope, 50 ft. per min. on two falls of rope, and 25 ft. per min. on four falls of rope. Derricking speed from maximum to minimum radius is 30 sec. Slewing speed round full circle is 24 sec. Travelling speed is 30 m.p.h. Weight in travelling order is 24½ tons.

Further details can be obtained from the U.K. distributors, George Cohen Sons & Co. Ltd., Wood Lane, London, W.12.

Battery Fluorescent Lighting

THE C.32 fluorescent lighting unit operates on battery supply, and will give two or three times the light of an equivalent wattage filament bulb at reduced current consumption.

The fitting incorporates a single 2-ft.

x 20-W. tube, an opal Perspex diffuser, and a transistorised control unit. The diffuser and its chromium-plated retaining frame can be dispensed with. Instant-start circuitry permits the lamp to reach full brilliance within approximately one second. Two standard models are available, for nominal voltages of 12 and 24 d.c. supply.

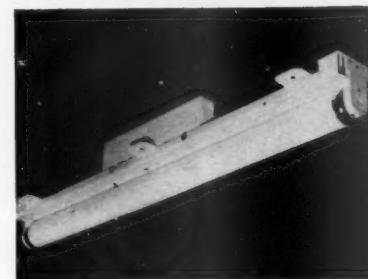
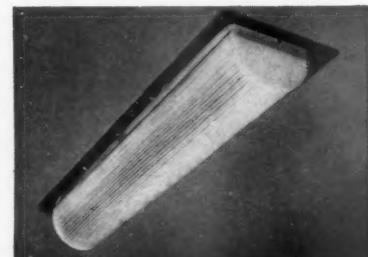
Construction is rigid and robust. All metal parts are of 20 s.w.g. steel, rust-inhibited and stove-enamelled white. Because of the high frequency used, and the

double-filament 6-V. 3-W. and 18-W. bulb, the domed translucent glass for maximum light distribution, and a simple relay unit are mounted in the lamp front, to which is connected a flexible lead from the 220/250-V. a.c. supply. The relay is held open by the a.c. mains and closes instantly on failure, thus connecting the 3-W. reserve filament of the bulb to the battery. If additional light is required the switch on the lamp front can be depressed to connect the 18-W. main filament. The battery will power the 3-W. filament for approximately 20 hr., or the 18-W. filament for 3 hr. before re-charging is necessary.

Most types of industrial battery chargers can be used to re-charge the battery provided that they can be adjusted to supply approximately 1.5 A. at 8.4 V. to 10.8 V.

Measuring 9 in. high x 8 in. wide x 7½ in. long, and weighing approximately 13 lb., the R.E.6 is flexible, completely self-contained, and easily maintained.

Further details can be obtained from Nife Batteries Limited, Redditch, Worcs.



thermal inertia of the gas in the tube, there is no stroboscopic effect, and the fitting can be used in complete safety even where there is fast-moving machinery.

Current consumption of the 12-V. model above, is 1.8 A., and of the 24-V. model, 0.9 A. The control unit is designed to accommodate variations in input voltage normally encountered in vehicle electrical systems. These are taken as ± 2 V. on 12-V. circuits, and ± 4 V. on 24-V. circuits. The unit can be adapted to deal with situations where their limits may be exceeded.

Weight complete is 5 lb. (less diffuser and frame, 3½ lb.).

Further details can be obtained from the manufacturer, Easco Electrical (Holdings) Limited, 6 & 8, Brighton Terrace, Brixton, London, S.W.9.

Portable Unit for Emergency Lighting

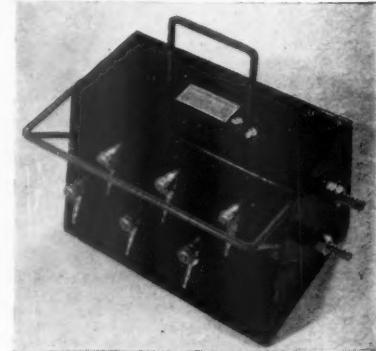
THE R.E.6 is a portable unit providing automatic emergency lighting immediately on a mains failure and is designed for use where permanent emergency lighting schemes are impracticable. It is particularly suitable for any building in which it is not necessary for the emergency lights to be permanently illuminated.

It contains a nickel cadmium alkaline battery which can stand indefinitely without damage and is virtually free from self-discharge; because of this trickle-charging is unnecessary and maintenance is negligible. There are no installation costs; the unit is merely plugged into the lighting circuit and operates automatically on mains failure.

The unit comprises a six-cell steel alkaline battery in a heavy-gauge steel case finished in high-grade enamel and fitted with a lid and carrying handle. The bulb-holder,

CONSTRUCTION sites commonly are littered with oxygen and acetylene cylinders and miles of rubber hose. Oxygen and fuel gas distribution cabinets are now available so that this all-too-common sight can be eliminated.

The cabinets are constructed so that up to three burners can operate from one unit.



Each unit is fitted with individual non-return valves and flashback arrestors, a factor which considerably increases the safety factor of the operation.

The cabinet is completely portable and it is almost impossible to knock it over. The operating valves are protected by the guard-rail as shown.

Further details can be obtained from the manufacturer, the D.S. Baddeley Engineering Co. Ltd., 43-45, York Street, Glasgow, C.2.

Laminate—P.V.C. Upholstery Link

IN active co-operation with Storey's of Lancaster, Formica Limited has reproduced a pattern created for that company's range of P.V.C. upholstery material in its Formica decorative laminate. The matching materials will interlink on the Formica stand at the 1960 Furniture Exhibition.

Formica Beautyboard, also to be exhibited, became available in December, 1959.

Further details can be obtained from Formica Limited, De La Rue House, 84-86, Regent Street, London, W.1.

Ministry of Transport Accident Report

Slough, May 1, 1959: British Railways, Western Region

Brigadier C. A. Langley, Chief Inspecting Officer of Railways, Ministry of Transport & Civil Aviation (now Ministry of Transport), inquired into the accident which occurred at 7.25 p.m. on May 1, 1959, at Slough when the 1.5 p.m. "Pembroke Coast Express," Pembroke Dock to Paddington, consisting of nine B.R. standard four-wheel bogie coaches with welded underframes and Buck-eye couplings throughout, with retractable buffers, drawn by 4-6-0 locomotive No. 5016, *Montgomery Castle*, approaching the station at about 70 m.p.h. under clear signals, passed over a broken right-hand rail which derailed a bogie in its front half. The last six coaches then became completely derailed some 300 yd. further on and the seventh turned on its side. The coupling parted between the third and fourth coaches and the front portion ran on for another half-mile until stopped by the automatic application of the vacuum brake. Although the train was crowded there were fortunately few casualties: four passengers and two railway staff were taken to hospital with minor injuries and 25 passengers and three staff suffered slight cuts or shock. Help was summoned immediately and speedily arrived; the injured received prompt aid.

Seeing sparks from the first derailed bogie the Slough West signalman sent "stop and examine" and quickly thereafter "obstruction danger" to Middle box and warning messages were relayed to the East and Dolphin Junction boxes so rapidly that the up main line signals were replaced to danger before the express stopped. At Dolphin Junction the signalman just had time to replace the down main signals and put detonators on the rail in front of the 7 p.m. Paddington-Reading train, approaching at speed. Its driver responded immediately and stopped before reaching Slough East home signal, $\frac{1}{2}$ mile ahead. The 6.47 train from Reading, on the up relief line, was stopped clear of West box home signal. Later it was admitted to the station and at 8 o'clock went forward to Paddington with passengers from the derailed express. The permanent way was very seriously and extensively damaged, but the down relief line was restored to traffic at 11 a.m. next day. Not until 6 p.m. on May 3, after a stoppage of nearly two days, could all lines be reopened. It was clear and fine with dry rails.

The layout at the approach to and through the station, with, in places, six lines of way, is complicated by several crossover junctions and two sets of connections leading to the Windsor branch, so that the path of the express onwards from the broken rail up to where the engine and the three vehicles still attached to it stopped involved two facing and four trailing connections and three diamonds. The report contains a drawing showing the layout generally and another giving an enlarged view of the portion from the point of derailment to the front of the six coaches which broke away from the three above-mentioned. There are also photographs of the broken rail, one of which is here reproduced by permission.

The Track

The broken rail was in a short length of 95-lb. bull-head rail between a diamond crossing near Farnham Road signalbox, itself 1,200 yd. on the Reading side of Slough West Road box, and a trailing connection from the down main line. The chairs weighed 45-lb., had steel keys and rested on creosoted pine sleepers on a bed of granite chippings in stone ballast. The

joints had standard four-bolt fishplates, cleaned and oiled within a month of the accident. Laid in 1948, this short length was due for relaying in the autumn on account of sleeper deterioration. The rails also had worn and the right-hand one in which the fracture occurred had been reduced to 91-lb. between chairs, and 89 at them through galling, but the length generally was in fair condition considering its age. General alignment was satisfactory with some slack to gauge and no serious side wear on either rail. The track in the next four sets of points and crossings was standard 109-lb. f.b., with steel plates on wooden timbers relaid in 1954; thereafter the plain track was standard 95-lb. b.b.

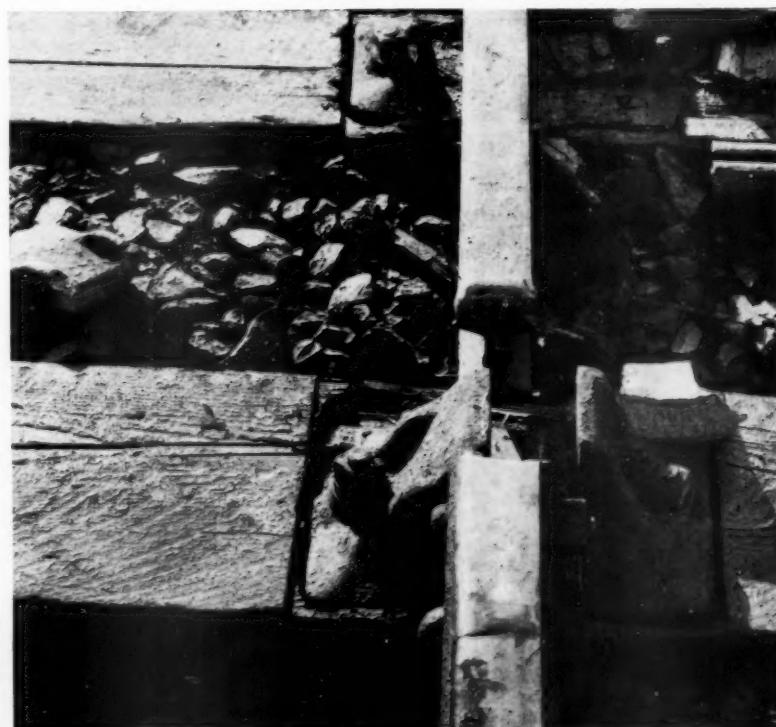
Fractured Rail

The fracture was close to a joint at the "running on" chair position; the complete piece of rail approximately 8 in. long, was broken in two, the head being separated from the web and foot, found one on each side a few feet away. Gall marks on foot and web each side of the joint suggested that sleeper spacing originally was 23 in., compared with the normal 25, and had become reduced to 22, virtually the minimum for joints with 18 in. fishplates. Depth of gall, however, was not abnormal. Fishplates were in good condition and not making contact with the web and the top of the inner chair jaw was clear of the rail fishing angle and the fracture. It was thought that a wooden shim had been inserted between the key and web at the "running on" chair position where the fracture occurred. Fishbolt holes were slightly deformed by bolt pressure but free from fatigue cracks.

The rail was examined by the Metallurgy

Division of the British Railways Research Department and found to be harder than the average with carbon content at the limit of 0.6 per cent, manganese content also was slightly above the limit in B.S. Specification No. 9. The rail was not brittle and tensile strength and elongation were well above the minimum allowed. It behaved normally under Izod impact and cold bend tests and had no segregation; microstructure was in keeping with the hardness. No metallurgical or mechanical feature of the rail can be regarded as the cause of the failure.

This began as a corrosion-fatigue crack in the $\frac{1}{4}$ in. fillet radius between the web and the head on the key side. It spread along and through the web until beyond the chair jaw where both ends turned downwards through the web at about 70 deg. from horizontal. The 8-in. length of head acted as a bridge over the crack and traffic caused severe battering between the underside of the head and top of the web. The fracture nearest the fishbolt hole reached the bottom of the rail about 1 in. inside the chair gall and the other fracture reached it at the edge thereof. The fractured surfaces of the head at both ends and of the foot at the running off end of the break were finely crystalline, indicating a sudden final fracture through these parts. Certain galling suggests that the crack reached the rail foot at this end some time before the rail collapsed, although some galling may have occurred afterwards from hammering of the wheels on the adjoining rail top after the broken head fell out. The severe bruising and flattening of the metal in the web of the broken piece and of the rail at the other end undoubtedly was caused by the hammering which continued until the second broken piece was forced out.



Broken rail, showing 8-in. gap which caused the derailment

It is impossible to estimate how long the rail had been cracked under the head; possibly one or more years, as rate of spread is very slow in these cases. Once the crack had started down the web movement became much faster and might have taken only a few hours, ending when the head at both ends and the remainder of the web and foot at the running off end of the fracture broke, probably under the leading wheels of the express. With this type of failure it is usually possible to detect the horizontal crack with a mirror and vertical cracks as soon as they begin to extend down the web; it is rare for complete failure to occur. In this case the crack through the web at the fishbolt end was concealed by the fishplate, although the one at the other might have been seen had a special examination been made shortly before the accident. The horizontal crack under the head was concealed by the chair and key but could have been detected by knocking out the latter and examining under the head with a mirror; undoubtedly it would have been found by a rail flaw detector, such as the Audigage ultrasonic apparatus.

Course of the Derailment

The train was held together in a remarkable manner by the Buckeye couplings now standard on all main line corridor stock. Photographs, a survey of the damage and certain evidence enabled Brigadier Langley to form a reasonably accurate view of the course of events. He thought it probable that the engine and first coach passed over the cracked rail with its head still in position and that this finally collapsed under the second coach which, however, was not derailed. It was unlikely that the initial derailment was caused solely by the 8 in gap, but the shock of passing wheels shattered the first chair beyond and probably the next one or two. It seems clear that the right-hand rail then moved outwards, lacking lateral support, and that either the trailing bogie of the third coach or leading one of the fourth left the rails there. After that the wheels had to negotiate two trailing and then two facing connections; examination of the marks on the track and damage done confirmed this. After finally bursting the track the rear six coaches ploughed a furrow for some distance with resultant severe retarding effect and fall in the speed. Parting of the train probably was due to a vertical and twisting movement of the couplings, but where it took place is not known. The first part ran on with the brakes being applied automatically and with the last bogie of all off the rails, bringing damage to three diamonds and two trailing connections, at the last of which the bogie became re-railed. The coach came in contact with the centre pier of an overbridge and the station platform. Finally the engine and the three vehicles stopped 150 yd. further on with the second and third buffer locked.

Evidence

The signalmen at the three Slough signal-boxes and Dolphin Junction gave evidence regarding the signalling of the express and other trains, the action taken when something was seen to be wrong, the stopping of the down fast train by detonators, etc., at Dolphin Junction and relevant matters.

The driver of the express explained how he felt a pluck when approaching Slough Road and finally stopped as described. His fireman told him that the signals had been replaced. He felt no rough riding between Farnham Road and Slough and did not know anything was wrong until he felt the pluck. He was confident his brakes were in good order. The fireman confirmed that they had not felt the initial derailment; he saw the home signal replaced as they passed it.

The guard, riding in the seventh coach, could throw little light on the accident.

The District Engineer, Cardiff, was a passenger in the second coach and felt a very severe jolt followed by a metallic clang; he thought the train had run over a broken rail in the "V" crossing of the line to Windsor. He felt three surges as speed was falling and passing the station, two very bad rolls. Going back he met the permanent way inspector and he found the broken rail.

The inspector said there was nothing to warrant special attention to the track. He had the rails for relaying the short length already on site. Realising there had been an accident he called out the ambulance team and they got there very quickly. He examined the track in the vicinity of the breakage but found no other defect.

The ganger had carried out his usual morning inspection and examined the track at the west junction again at 4 p.m.; he always did this as it carried the heaviest traffic on his section. He found nothing to alarm him and saw no sign of a fracture. In November, 1958, he had packed through where it was found, using the measured system and the lift varied from $\frac{1}{8}$ to $\frac{1}{4}$ in. He had repacked one of the joints three or four times but otherwise had no trouble with this length. On April 5, 1959, he removed and oiled the fishplates, knocking out adjoining keys and cleaning the rails with an oily rag. He examined for cracks as far as possible with a mirror to see below the rail head; space between chair and rail was insufficient for him to use one there. He saw no sign of a fracture and had never had one on his length in 24 years service.

The Assistant Civil Engineer, Western Region, passed through Slough between 5.12 and 5.15 p.m. at 60 to 65 m.p.h. in an inspection coach attached to the rear of an express; he felt a lurch which was not severe but gave the impression of a joint being slightly slack. He would have told his District Engineer next day but learnt of the accident and going to the scene, found the broken rail where he had noticed the lurch. He did not think the rail could have been actually fractured when he passed or he would have felt a more severe bump.

The Running and Maintenance Officer reported that every driver who had passed over the up main line at Slough on the day of the accident had been questioned but none had noticed anything unusual.

Chief Inspecting Officer's Conclusion

It was fortunate that only one bogie became derailed initially and damage to the train and resultant casualties were so slight. There were no metallurgical or mechanical defects in the rail, but the short length of track concerned carried 100 trains daily, mostly at high speeds, and was due for relaying in the autumn. The sleepers had begun to split and there was some widening of the gauge, with slight variations in alignment and cross level, subjecting the track to stresses above the normal. No doubt these increased the fatigue effects but not to an extent calling for action beyond the proposed relaying. The joint may also have been slightly low, further increasing the stresses and accelerating growth of the fatigue crack.

Although one could not be positive about the time taken for the failure to develop the longitudinal crack under the rail head must have been visible before the ganger oiled the joint less than four weeks before. His evidence is accepted but it is considered he could not have used his mirror correctly to inspect the upper fillet alongside the chair; had he done he could not have failed to see the crack. Brigadier Langley himself proved this to his satisfaction by tests with the same mirror and concluded that the ganger exercised insufficient care when examining for cracks during the oiling. It seems likely that the final movement of the crack down-

wards through the web began some hours—or maybe days—before. The one near the fishbolt hole was covered but would have been visible at the other end. Brigadier Langley does not, however, criticise the ganger for not seeing the small vertical crack on the day of the accident. Close to the chair it might well be missed unless a special examination was made.

Remarks

During the period 1955-58 only 23 rails have broken from cracks originating along the upper fillet radius between rail head and web; of these only two occurred in the Western Region. This number is less than 10 per cent of the total rail failures. Sixty-two cracked rails were found, however, and removed, as a result of visual inspection, and two more were detected with an Audigage; 13 were in the Western Region. Twenty-two of the 23 failures and 54 of the 64 cracks were in 95-lb. b.h. rails, mostly in ones laid in the track from five to 25 years (average age 18) on Class A main lines carrying 50-120 trains daily.

The type of failure initiating this derailment has been confined almost entirely to the older sections of rail with sharp fillet radii; during the last four years only one 109-lb. flat-bottom cracked rail, with much flatter radius, has been found. It is not yet possible to give definite proof, but available evidence points to this rail being less liable to this type of failure, and during the last nine years 90 per cent of rails laid in Class A main lines have been standard flat-bottom, and the process continues. Failures should thereby be reduced, but the great majority of rail breakages are due to other causes, such as cracks through fishbolt holes.

In the Western Region reliance is placed primarily on the ganger for detecting cracked rails; this has proved satisfactory. Brigadier Langley could find no other case of a broken rail causing a derailment in the Western Region, or on its predecessor, the Great Western Railway. In recent years Audigage ultrasonic apparatus has been used in tunnels and on tracks where there are water troughs, as corrosion is more rapid there and detection of cracks more difficult, especially in tunnels. Skill and experience are required, however, and the process is slow. General use of such equipment cannot in the present state of development, be justified as a complete substitute for visual examination.

Most cracks occur at or near joints and usually take a long time to develop. Annual inspections should ensure detection before they become dangerous. The Western Region already had issued comprehensive instructions covering the annual inspections made when oiling fishplates in the spring, but as a result of conversations between Brigadier Langley and the Chief Civil Engineer, they are being amplified and made clearer.

The rapidity with which warning was relayed forward and the train approaching on the down main line stopped reflects much credit on the men concerned, who acted in a way one has come to expect from responsible railwaymen.

PANTAK LIMITED TO IMPORT FRENCH X-RAY UNITS.—Pantak Limited of Vale Road, Windsor, Berks, has concluded an agreement with Usines Balteau of Liège for the marketing in the United Kingdom of two ranges of lightweight portable industrial X-ray equipment. This will complement the existing range of mobile equipment and will consist of two oil-insulated units of 140 and 200 kV. capacity and three gas-insulated units of 150, 180 and 300 kV. capacity, the 180 kV. unit being specially developed for the examination of circumferential welds and so on.

Questions in Parliament

Railway Strike in Kenya

Mr. Stephen Swingler (Newcastle-under-Lyme—Lab.) asked the Secretary of State for the Colonies, on December 17, what reply had been given by the Governor of Kenya to the request of Mr. Tom Mboya, General Secretary of the Kenya Federation of Labour, for the establishment of an inquiry into the origins of the recent railway strike.

Mr. Julian Amery, Under-Secretary of State for the Colonies: Mr. Mboya did not ask the Governor for such an inquiry.

Mr. Swingler: Will the Under-Secretary kindly check that information? Is he aware that it was reported in the Press that Mr. Mboya made a speech demanding some form of investigation of the situation. Could there, therefore, be some consultation?

Mr. Amery: No, Sir. I have checked with the Governor. What appeared in the Press was a misunderstanding of Mr. Mboya's request to the Governor to intervene in the strike. He did not ask for inquiries, as far as I am aware.

M.P.'s Withdrawal Request

Mr. John MacLeod (Ross and Cromarty—N.I.C.) asked the Minister of Transport on December 17, why the Member for Ross and Cromarty, as a representative of the Highland Panel, was officially asked to withdraw from a deputation to him on December 3, regarding the closure of railway stations north of Inverness.

Mr. Ernest Marples in a written answer: The composition of the deputation was, of course, a matter for the local authorities concerned. However, when I found that not all the hon. Members representing the constituencies affected were with the deputation, I thought it best to ask my hon. Friend whether he would kindly withdraw.

Contracts and Tenders

The Government of Argentina has approved a direct contract with the firm of Ganz Argentina S.A., the Argentine representative of the Ganz group of Budapest, for the supply of 80 passenger coaches for use on the State Railways. This transaction is being made under the current Argentine-Hungarian Trade Agreement and is part of the Government's plan of investments and public works for 1958-59.

British Railways, London Midland Region, has placed the following contracts:-

Cementation Co. Ltd.: construction of bored piles in the foundations to the proposed bridges within the marshalling yard at Kingmoor, Carlisle.

Henry Hope & Sons Ltd.: renewal of roof coverings to main shed and office block at motive power depot, Crewe South.

R. G. Horton (Contractors) Limited: renewal of roofing for Chester General Passenger Station.

E. B. Jones & Rawlinson Limited: reconstruction of Handforth Station on account of main line electrification.

Harbour & General Works Limited: alterations to existing and construction of new roofs at Preston Station.

Young, Austen & Young Limited: installation of steam heating system in electric locomotive repair shop at Crewe Locomotive Works.

Harbour & General Works Limited: new subway and footbridge at Liverpool James Street Station and alterations to lower landings at Hamilton Square Station, Birkenhead.

William Townson & Sons Ltd.: new office block at London Road Station.

British Railways, Southern Region, has placed the following contracts:-

L. & W. Whitehead Limited: new control room, extension of electrification, Paddock Wood.

Sidney Pratt (Builders) Limited: renewal and reconstruction of loading docks, Exeter Central Goods Yard.

A. J. Dunning & Sons (Weyhill) Ltd.: new inquiry office, Southampton Central.

L. & W. Whitehead Limited: modernisation of marshalling yard, new staff accommodation, Ashford, Kent.

The Special Register Information Service Export Services Branch, Board of Trade, has received calls for tenders as follow:-

From South Africa:

A large quantity of component parts for rail trolleys, including petrol engines, radiators, and complete instrument panels.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. F8108 Engines, Radiators and Instrument Panels for Rail Trolleys," should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is January 8, 1960. Local representation is essential. The Board of Trade reference is ESB/30016/58.

Further details relating to the above tenders together with photo-copies of tender documents can be obtained from the Branch (Lacson House, Theobald's Road, W.C.1.).

Staff and Labour Matters

Railway Wage Claim

Writing in the first issue for 1960 of *The Railway Review* and covering the events of the past year, Mr. S. F. Greene, General Secretary of the National Union of Railwaymen, urged members against strike action. This had been threatened in the hope it would speed up the Independent Pay Committee's Report and because the union's claim for a substantial increase in pay had been rejected. Mr. Greene stated: "If it would solve the problem of wages I would recommend it myself, but any responsible member would know that after such an action, we would be in the same position or, perhaps, worse. Every time there is some suggestion of strike action, some trader starts looking for another way to send his traffic."

Mr. Greene stated that, for the first time in the history of the union, two major claims are running at the same time. He says, these are the Pay Review, in which the N.U.R. is accompanied by A.S.L.E.F. and T.S.S.A., and the claim for a substantial increase in pay which the N.U.R. is pursuing on its own. He also states that the fact that there are two claims shows the degree of agitation and concern existing among the union's membership.

The claim for a substantial increase in pay is being referred by the union to the next stage of the negotiating machinery—the Railway Staff National Tribunal—but so far no date has been fixed for the hearing.

Despite the appeal from union headquarters, London railwaymen decided on January 5 to call an unofficial 24-hr. token strike from midnight on January 31 to midnight February 1.

B.R.S. Men on Strike

Also on January 5, 3,230 British Road Services men became involved in an unofficial strike over the new pattern of shorter working hours introduced on January 4.

Notes and News

Public Address System for Queens Park Station.—Loudspeakers have been installed at Queens Park Station, British Railways, London Midland Region. All platforms will be covered by the installation. Some 640 London Midland Region and London Transport trains use the station every day.

Institute of Metals.—The Prime Minister, Mr. Harold Macmillan, has accepted an invitation to be the principal guest and speaker at the annual dinner of the Institute of Metals, to be held in the Great Room, Grosvenor House, London, W.1, on March 31. The United States Ambassador has also accepted and will reply to the toast of "The Guests."

Symposium on High-temperature Resistance and Thermal Degradation of Polymers.—The Plastics & Polymer Group of the Society of Chemical Industry is to arrange a three-day symposium with the title "High-temperature Resistance and Thermal Degradation of Polymers" to take place at the William Beveridge Hall, Senate House, University of London, W.C.1, on September 21-23 1960.

Institution of Locomotive Engineers.—The Council of the Institution of Mechanical Engineers have extended an invitation to the members of the Institution of Locomotive Engineers to attend a meeting of the Institution of Mechanical Engineers, at 1, Birdcage Walk, Westminster, S.W.1, on January 13, at 6 p.m., when a paper will be presented and discussed on "The strength of rails with particular reference to rail joints," by Mr. S. Wise, Mr. D. Lindsay and Mr. I. G. T. Duncan.

Mobile Rail Enquiry Bureau in the Sheffield Area.—To assist members of the public in making advance plans for their summer holidays, a British Railways, Eastern Region, mobile rail and road enquiry bureau is touring Sheffield and the adjacent towns of Chesterfield, Rotherham, and Barnsley this month. The staff in the bureau will be able to advise travellers on the various facilities available from the Sheffield area to different holiday resorts throughout Great Britain, with particular emphasis on the resorts of North Wales, including the numerous attractive tours in that area.

Shipowners to Pay Damages to Danish State Railways after Collision with Bridge.—A British shipowning firm, F. T. Everard & Sons Ltd., has been ordered by a Danish court to pay £23,000 damages to the Danish State Railways after an accident in 1956, when the company's motor tanker *Astralia* collided with the railway bridge across the Lim Fjord Strait in northern Jutland. Two spans fell into the water. Traffic across the bridge was stopped for a considerable time. The shipowners had offered the Danish State Railways the sum now awarded. The State Railways are reported to have stated that the cost of repairs to the bridge and indirect losses amounted to £300,000.

Final Print of Modernisation Poster Issued by Eastern Region.—The twelfth and final edition of the quad-royal progress poster of the Barking Flyover scheme has been issued by the Eastern Region of British Railways. First produced in November, 1956, as part of the Eastern Region policy of keeping the public informed of the latest modernisation developments, the poster was on exhibition at London Transport and British Railways stations in the London area, and gave a diagrammatic layout of the alterations being carried out to improve the track layout and passenger facilities in the Barking area.

All that now remains to be carried out is the reconstruction of the station buildings. The alterations to the track layout and the building of the flyovers were completed during 1959. The poster backgrounds were printed in six colours by Waterlow & Sons Ltd., each issue being brought up to date by silk screen overprinting.

Craven Bros. (Manchester) Ltd. London Office.—The address of the London office of Craven Bros. (Manchester) Ltd. is now 139, Park Lane, W.1, tel. Mayfair 6783. The telegraphic address is: Cravtool, Audley, London.

Leyland Motors Limited Spanish Link.—Leyland Motors Limited has purchased a substantial share-holding in Empresa Nacional de Autocamiones S.A. (E.N.A.S.A.), which makes Pegaso commercial vehicles. Sir Henry Spurrier, the Chairman and Managing Director, and Mr. Donald G. Stokes, General Sales & Service Manager of Leyland Motors Limited, will join the board of the Spanish company.

New Halt on Kemble-Cirencester Branch.—British Railways Western Region on January 4 opened a new halt at Park Leaze, between Kemble and Cirencester. All services over the branch call at Park Leaze Halt 4 min. after leaving Kemble and 5 min. after leaving Chesterton Lane Halt in the reverse direction. Services between Kemble and Cirencester are operated by railbuses, introduced experimentally in an endeavour to make the branch self-supporting.

Hawker Siddeley Group and De Havilland Holdings Merger.—The boards of Hawker Siddeley Group Limited and De Havilland Holdings Limited have agreed to recommend a merger of the two companies. The merger will be effected by an offer by Hawker Siddeley Group Limited for the whole of the issued ordinary share capital and for the 5½ per cent preference stock of De Havilland Holdings Limited. The terms of the offer are: (1) One Hawker Siddeley £1 ordinary share for each De Havilland £1 unit of ordinary stock, and (2) three Hawker Siddeley 5½ per cent £1 preference shares and 20s. in cash for every four De Havilland 5½ per cent £1 preference stock units.

Luncheon to G.W.R. Directors, Western Area Board and Officers.—Mr. J. R. Hammond, General Manager, British Railways, Western Region, on December 22, enter-

tained at the Great Western Royal Hotel, Paddington, W.2, former Directors of the Great Western Railway Company, Members of the Western Area Board, British Transport Commission, officers past and present of the G.W.R. and the Western Region, and other guests. The illustration shows (standing, left to right): Sir Edward Cadogan, Sir Allan Quartermaine, Mr. Cecil W. Rodd, Lord Astor, Mr. R. F. Hanks, Mr. J. R. Hammond, Lord Dudley, Mr. K. W. C. Grand, Sir George Harvie-Watt, Mr. A. Chamberlain, Sir Leslie Ford, Mr. Cyril Lloyd, Mr. F. A. Parish, and Mr. Dickson Wright.

Transport Strike in New York Averted.—The threatened strike of New York City Transit System employees, which would have involved the urban underground lines and the bus and trolleybus services, was averted last week by an agreement reached between the Transport Workers' Union and the New York City Transit Authority.

Esso Pipeline to West London and London Airport.—The Esso Petroleum Co. Ltd. is seeking planning permission for a 75-mile oil products pipeline from its refinery at Fawley near Southampton, to a new distribution depot near London Airport. This will be the first large-scale commercial pipeline for refined products in Britain. All grades of light oils will be pumped direct from the Esso refinery to the new distribution depot, from which deliveries will be made by road to an area including the whole of West London and, for aviation fuels, by separate pipelines to London Airport. The proposed route of the pipeline is under Southampton Water and under the Thames. It will also pass under several railways.

Trains a "Magnet" for Boys.—Trains and water of every description were the very strongest magnets to the young, according to Mr. D. B. H. Harfield, Southampton County Coroner, at an inquest on three boys killed by an express near Christchurch on December 30. He recorded verdicts of death by misadventure. The boys, he stated, were technically trespassers and British Railways could accept no liability. Earlier, the father of two of the boys had asked that British Railways locomotives should carry a headlight, as used in North America, and added that he felt sure that his sons would have been alive had this been the practice. The coroner replied that in Britain the whole track was adequately fenced. In his view

an engine driver's tendency should be to look upwards at signals and not along the line to see if anyone was on it. In the U.S.A. and Canada railway tracks were more or less public highways.

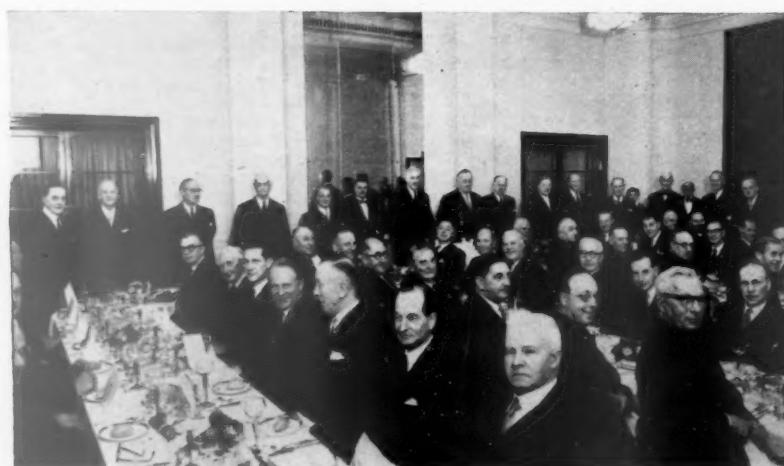
District Line Trains between Olympia and Kensington High Street.—During the recent sales in department stores in Kensington, British Railways, Southern Region, ran excursion trains for shoppers to Olympia (formerly Kensington Addison Road) Station. On the L.T.E. District Line a shuttle service has been operating between Olympia and Earls Court, as is usual when an event is taking place at Olympia. The Olympia to Earls Court train, with which a connection was made at Olympia with the excursion trains arriving from the Southern Region, ran through beyond Earls Court to Kensington High Street.

B.R.S. Improved Conditions of Carriage.—British Road Services has adopted simplified conditions of carriage since January 1. These now incorporate the increase in the liability for damage or loss from £400 to £800 a ton, and an extension of the time allowed for claims to be put in against non-delivery. The latter gives formal recognition to the concessionary time limits of 28 days for written notification and 42 days for the actual claim to be submitted, which has been applied in practice for some time. The number of Conditions has been reduced from 38 to 15.

B.T.C. Interest in Air Firm.—Discussions are taking place between the British Transport Commission and the British Aviation Services group regarding the possible acquisition by the B.T.C. of a minority interest in Silver City Airways, the group's principal operating company. Silver City is the airline which pioneered the cross-Channel car ferry service. Last year it carried 67,454 cars on its various cross-Channel ferries, and on all services it had more than 450,000 passengers. Under the Air Navigation Act, British Railways is precluded from running air services, but it is not prevented from acquiring an interest in a private airline.

Derailment on the Italian State Railways.—An electric hauled passenger train carrying 1,000 passengers from Sondrio in the Italian Alps to Milan, Italian State Railways, was derailed at Monza last Tuesday. Fifteen passengers were killed and about 100 injured. The train jumped the rails as it passed over a temporary steel bridge over excavation works. The second coach overturned, and the third was thrown into the air and landed on the roof of a two-storey factory, 100 ft. from the tracks. The Italian Transport Ministry stated that the speed limit prescribed for the point where the accident occurred was 6 m.p.h. It seemed from first investigations that this limit was not observed. The train was composed of an electric locomotive, a luggage coach, and 10 passenger coaches.

Acceleration of Southern Region Kent Coast Services.—Additional stops introduced by British Railways, Southern Region, in some fast business trains enable passengers from 10 more stations to use the expresses. The 6.55 a.m. from Ramsgate to Cannon Street (weekdays) calls at Rainham at 7.59 a.m. and is retimed to leave Sittingbourne at 7.52 a.m. The 5.44 p.m. from Victoria to Ramsgate and Dover Priory (Mondays to Fridays) calls at Gillingham at 6.30 p.m. and is retimed 2 or 3 min. later for the rest of the journey. The 6.14 p.m. from Cannon Street to Ramsgate (Mondays to Fridays) calls at Sittingbourne at 7.4 p.m. The 5.41 p.m. from Charing Cross to Ramsgate (Mondays to Fridays) is retimed 3 min.



Mr. J. R. Hammond with Directors of the former G.W.R., Members of the Western Area Board, and retired and serving officers of the G.W.R. and Western Region at the Great Western Royal Hotel on December 22

later from Sittingbourne onwards, and the 6.38 p.m. from Sheerness to Dover Priory is retimed 3 min. later from Faversham onwards. Passengers who previously travelled by the 5.41 p.m. from Charing Cross to Teynham, Faversham, and the Sheerness branch can save 30 min. by catching the 6.14 p.m. from Cannon Street and changing at Sittingbourne. Certain fast trains now call additionally at Chestfield & Swalecliffe Halt.

Carol Concert at Euston.—After the annual carol concert by a choir of railway staff at Euston Station, British Railways London Midland Region, held on December 23, gifts of toys and sweets bought from the



*In the Great Hall, Euston Station, during
the Christmas carol concert on
December 23*

proceeds of a collection from passengers at the concert were sent to certain hospitals in London. The carols were introduced by the Rev. John Borrill, Vicar of St. Pancras, who is seen with the choir on the steps in the Great Hall.

Richard Thomas & Baldwins Limited.—The Government has announced its intention to lend an extra £10,000,000 to Richard Thomas & Baldwins Limited to make possible an increase of 235,000 tons in steel sheet output by 1962.

Murex Limited, Raised Dividend.—The interim dividend on the ordinary capital of Murex Limited has been raised from 5 per cent last year to 7½ per cent, payable on February 5. It is stated by the directors that group trading results for the year to April 30, 1960, show a marked improvement on those for 1958-59.

Robert Hudson Limited in Strong Position.—A final dividend of 8½ per cent, less income tax (5d. per ordinary share), is recommended by the directors of Robert Hudson Limited to make the total dividend 16½ per cent for the past financial year. Group profits, after tax, were £279,660. According to the Chairman, Mr. Kenneth Hudson, the balance sheet reveals that a considerable liquid position existed at June 30 since when capital expenditure of £174,000 has already been authorised; further projects promoting a greater expansion of the interests of the company are being studied.

New Ferry Vessel for the Caledonian Steam Packet Co. Ltd.—A practical step in the encouragement of tourism in the Highlands has been taken by the Caledonian Steam Packet Co. Ltd., in the placing of an order for an additional ferry vessel to operate on the Kyle of Lochalsh-Kyleakin ferry service. The new ferry, which will be similar to the present *Lochalsh* with a capacity for passengers and six cars will bring the fleet of vessels up to four and will enable full use to be made of the improved berthing facilities to be provided at Kyle of Lochalsh and Kyleakin. The order is being placed now so that the ferry may be ready for next summer traffic.

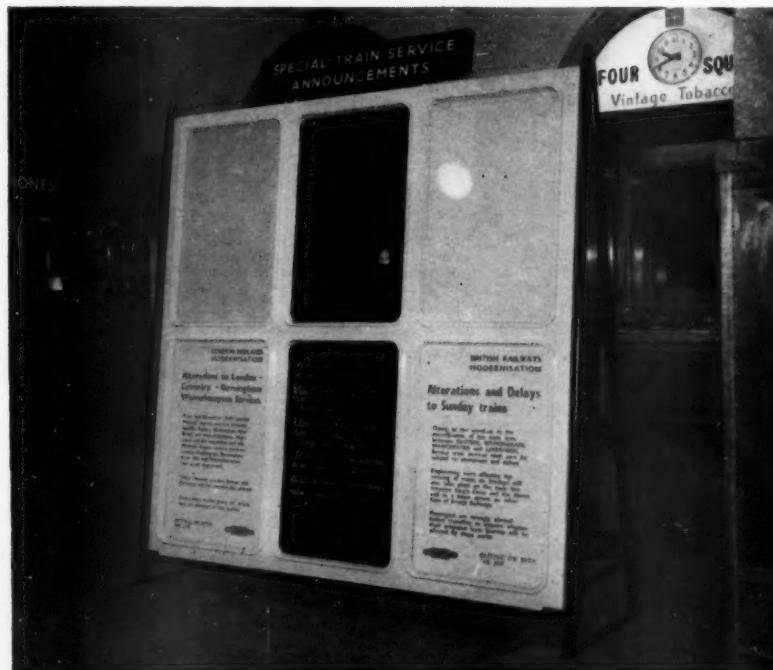
North Circular Road Viaduct Over Great Eastern Line Tracks.—Mr. Ernest Marples, Minister of Transport, announced recently that work would start this month on a new 10-span viaduct to carry the North Circular Road over the Cambridge main line and some sidings of the Great Eastern Line of British Railways, Eastern Region, at Edmonton. The viaduct, which is to replace the existing Angel Road Bridge, is part of a larger plan to complete the duplication of carriageways on the North Circular Road in Middlesex. The contract for the bridge and roadworks has been awarded to Leonard Fairclough Limited. The viaduct will consist of pre-stressed concrete beams on reinforced concrete columns with five spans of 40 ft., four of 50 ft., and one of 57 ft. 6 in. There will be two 30-ft. wide carriageways and two 10 ft. wide footways.

New Announcement Board for L.M. Region Electrification Notices.—A special announcement board has been designed by the Public Relations & Publicity Officer, British Railways, London Midland Region, to advise passengers of the alterations, diversions, and delays which may arise as a consequence of electrification work. The fitment consists of a free standing panel containing six D.R. size frames, Perspex covered, with chalkable boards, which are inserted from the back. The surrounds and frames are bright yellow, and panels not in use are coloured a pastel

shade. The board was constructed by the Partington Advertising Co. Ltd.

Shell-Mex & B.P. Film.—A new colour film shown by Shell-Mex & B.P. Limited.—“The Inside Story”—describes the development and properties of Shell Rotella Multigrade oil for road transport vehicles. The story is seen through the eyes of a technical journalist and shows how Shell Rotella oils were augmented by additives to give a good reserve of lubrication safety at higher operating temperatures and greater fluidity at cold starting temperatures. Practical demonstrations justifying the manufacturer's claims regarding the new oils are included in the film, which runs for 34 min. and is available on free loan from Shell-Mex & B.P. Limited, Shell-Mex House, Strand, London, W.C.2, from next season. Further details of Multigrade oil will be published in next week's “New Equipment and Processes” section.

Commonwealth Engineering Co. Ltd., Results.—The Commonwealth Engineering Co. Ltd., Sydney, New South Wales, made a consolidated net profit of £188,547 for the year ended June 30, 1959. This is an increase of £20,697 or 12.3 per cent over last year's figure. Dividend on the larger average capital is held at 13½ per cent and absorbs £125,606 which is £38,981 higher than in the previous year. The profit represents an earning rate of 20.6 per cent on average capital. The major portion of the new capital acquired a 51 per cent interest in Union Carriage & Wagon Co. (Pty.) Ltd., of South Africa, which has orders on hand from the South African Railways for rolling stock worth £A9,300,000 to be delivered over approximately 4½ years. Union Carriage & Wagon was not profit earning by June 30, and profit can reasonably be related to the remaining average paid capital state the directors. The company secured several important railway contracts during the year as well as a number of smaller ones. A new subsidiary, Henry Dissston & Sons Pty. Ltd., incurred a loss due to initial costs but is now profit earning.



London Midland Region announcement board, showing chalked panels in the centre

New Sales Area for Nife Batteries.—To deal with increasing business in alkaline accumulators, emergency equipments and industrial safety lamps, Nife Batteries Limited is setting up an additional sales engineering area. This, the North Midlands Area, will include Sheffield, Doncaster, Scunthorpe, Derby, Nottingham, and Lincoln and the surrounding districts. The engineer in charge will be Mr. P. Sandels, formerly of the Manchester Area. His address will be 4, Ordsall Park Road, Retford, Notts, tel. Retford 2330.

Manchester - Sheffield Electric Service.—Because of reconstruction work at London Road Station, Manchester, the entire electric passenger service between Manchester and Sheffield is being diverted from and to other Manchester stations until April 23. The 1.25 and 1.50 a.m. from London Road are starting from Mayfield at 1.17 and 1.50 a.m.; the 7.36, 8.30, 10.10, 11.35 a.m. and 7.5 p.m. from Manchester Central at 7.20, 8.10, 9.51 11.16 a.m. and 6.40 p.m.; and the 9.10 a.m., 12.40, 2.10, 4.5, 5.0 and 8.35 p.m. from Manchester to Victoria at 8.46 a.m., 12.22, 1.46, 3.45, 4.39 and 8.13 p.m., respectively. Trains in the opposite direction are diverted similarly, and have 16-25 min. added to their journeys. Steam haulage is necessary between Manchester Central and Guide Bridge, or Manchester and Midland Junction (Ashburys), as the case may be, and the increased times make the necessary allowance for changing engines. The former 8.30 a.m., 2.10, and 4.5 p.m. from Manchester to Marylebone now run only to Sheffield. The 1.50 a.m. from London Road (now Mayfield) runs to Lincoln instead of to Cleethorpes.

Forthcoming Meetings

January 13 (Wed.).—Institution of Mechanical Engineers, at 1, Birdcage Walk, Westminster, S.W.1, at 6 p.m. Paper on "The strength of rails with particular reference to rail joints," by Mr. S. Wise, Mr. D. Lindsay, and Mr. I. G. T. Duncan.

January 13 (Wed.).—Institute of Transport, Southern Section, at the Harbour Board, Southampton, at 5.45 p.m. Paper on "Some economic questions in transport," by Mr. D. R. Munby, Reader of Economics Organisation of Transport, University of Oxford.

January 14 (Thu.).—Institute of Transport, East Midlands Section, at the Mechanics Institution, Nottingham, at 1 p.m. Paper on "Road haulage then and now 1933-59," by Mr. G. W. Quick-Smith, Adviser (Special Projects), British Transport Commission.

January 15 (Fri.).—Railway Correspondence & Travel Society, London Branch, at Railway Clearing House, Eversholt Street, N.W.1, at 7.15 p.m. Lantern slides. "Several years of railway photography," by Mr. E. R. Wethersett.

January 16 (Sat.).—Permanent Way Institution, East Anglia Section, at Cambridge, at 2.15 p.m. Paper on "Work study in the Cambridge District," by Mr. C. A. Farey.

January 16 (Sat.).—Institute of Mechanical Engineers, Graduates' Section, at 1, Birdcage Walk, Westminster, S.W.1, at 3 p.m. Annual lecture on "The future of the high-speed reciprocating internal combustion engine," by Mr. J. H. Pitchford, Vice-President.

January 19 (Tue.).—Institution of Locomotive Engineers, at the Institute of

Mechanical Engineers, 1, Birdcage Walk, Westminster, S.W.1, at 5.30 p.m. Paper on "Some aspects of railway braking," by Mr. R. C. S. Low.

January 20 (Wed.).—Institute of Mechanical Engineers, at 1, Birdcage Walk, Westminster, S.W.1, at 6 p.m. Paper on "The diesel engine in association with the gas turbine," by Mr. E. E. Chatterton.

January 20 (Wed.).—Railway Students' Association, at the London School of Economics & Political Science, Houghton Street, Aldwych, W.C.2, at 6.15 p.m. Paper on "Civil engineering practice and problems on the Russian railways compared with those on British Railways," by Mr. M. G. Maycock, Chief Civil Engineer, British Railways, Scottish Region.

January 20 (Wed.) to January 21 (Thu.).—Institution of Electrical Engineers, measurement & Control Section, in co-operation with the British Computer Society, at Savoy Place, London, W.C.2, at 5.30 p.m. Discussion meetings on managerial and engineering aspects of reliability and maintenance of computer systems.

January 21 (Thu.).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Debate with South Wales & Monmouthshire Railway & Docks Lecture & Debating Society "That a modernised railway system will be unable to meet the challenge of other forms of transport."

January 21 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Paper on "Railways of Western Europe," illustrated with colour transparencies, by Mr. P. J. Kelley.

OFFICIAL NOTICES

THE REPUBLIC OF THE SUDAN

APPLICATIONS are invited from those suitably qualified to fill the following vacancies in the Sudan:

- (a) Assistant Works Manager—Ref. 4/1934
- (b) District Locomotive Superintendent—Ref. 4/1907
- (c) Water Service Engineer—Ref. 4/1935
- (d) Resident Electrical Engineer (Diesel)—Ref. 4/1926.

Candidates for posts (a) and (b) must be fully qualified locomotive engineers, hold a degree in Mechanical Engineering or be Corporate Members of the Institution of Mechanical Engineers. Must have served a recognised apprenticeship with a firm of locomotive and wagon builders or a railway company. Must have held a position of responsibility in locomotive engineering for not less than five years.

Candidates for post (c) must be a graduate of a University or Engineering College with an extensive knowledge of mechanical and hydraulic engineering. Must be fully conversant with both diesel and steam pumps, laying of pipes, running of watering station, knowledge of water treatment and analysis. Experience in drilling bores is required.

Candidates for post (d) must be fully qualified electrical and diesel engineers. Be Corporate Members of the Institution of Electrical Engineers or have equivalent qualifications. Have served a recognised apprenticeship with a railway company and have extensive experience in the repair, maintenance and operation of Main Line Diesel Electric Locomotives together with sound experience in motive power organisation. Must be able to control junior staff. Age limits for these appointments 30-50 years.

Appointments will be on contract (with bonus) for a period of three years in the salary range £5.1.075-£5.1.975. A cost of living allowance is payable and an initial outfit grant of £5.50 is payable on appointment. Annual home leave accrues at the rate of seven days per month.

Applications should be made in writing, giving fullest particulars and qualifications, experience and age to The Sudan Embassy, Personnel Section, Cleveland Row, St. James's, London, S.W.1, quoting the appropriate reference number.

Closing date January 31, 1960.

Railway Stock Market

The strength and optimism which featured stock markets at the close of last year has continued, and although the pace of the advance in industrial shares values slackened, many shares have touched fresh record levels.

The high prices now ruling tended to make for more cautious approach, and buying has become more selective. Now that fears of a higher bank rate have lessened, British Funds have rallied. The further spectacular advance in prices has been accelerated by widespread demand which made for an acute shortage of shares in the market.

With buying interest centred on industrial shares, there was again very little business in foreign and other railway stocks, which recorded few price changes. Antofagasta ordinary stock was 17 and the preference stock 30xd with the 5 per cent (Bolivia) debentures 98.

Costa Rica ordinary stock was 21½, and the 6½ per cent first debentures 80½. Chilean Northern first debentures were 62, and Brazil Railway bonds 7½, while Paraguay Central prior debentures were 16½ and Guayaquil & Quito assented bonds 81½. International of Central America shares were \$24½ and the preferred \$112½.

Canadian Pacifics firmed up to \$47½; the 4 per cent preference stock was 57½xd with the 4 per cent debentures at 66½. White Pass shares were \$14.

United of Havana second income stock kept at 6 with the consolidated stock at 1. San Paulo Railway 3s. units were 1s. 6½d. Mexican Central "A" bearer debentures held steady at 55½.

Nyasaland Railways shares were 11s. and the 3½ per cent debentures 51½. Elsewhere, West of India Portuguese capital stock was 108½ with the 5 per cent debentures 91½xd. Barsi Light Railway ordinary stock was quoted at 29½.

Engineering and kindred shares have been prominent on prospects of increased activity in the industry in 1960. Although best prices were not quite held, Vickers at 39s. have risen strongly on balance, partly because the 5 per cent yield brought in some buyers.

Cammell Laird 5s. shares moved up to 9s. 6d., Babcock & Wilcox rallied to 48s., and Ruston & Hornsby to 35s. 6d. Edgar Allen shares advanced to 52s., and Renold Chain to 55s. xd. Tube Investments were strong at 138s. 6d. and T. W. Ward good again up to 167s. 6d. British Oxygen at 84s. 3d. lost part of an earlier considerable rise.

Metal Industries were 74s. 6d. after news of the bid for Lancashire Dynamo; the shares of the latter were 64s. 6d.

Beyer Peacock 5s. shares were 8s. 7½d., Charles Roberts 5s. shares 19s. 9d., and North British Locomotive 9s. 3d. Wagon Repairs 5s. shares have changed hands around 12s., and Gloucester Wagon 5s. shares around 15s. 4½d. Elsewhere, G. D. Peters were 21s., with Birmingham Wagon 29s. at which there is a yield of over 6½ per cent on the basis of last year's 10 per cent dividend.

Westinghouse Brake strengthened to 59s. 4½d., Dowty Group 10s. shares were active around 52s. 9d., and Pressed Steel 5s. shares strong at 45s. 1½d. Stone-Platt were 60s., Ransomes & Marles 5s. shares 27s. 3d., and Pollard Beating 4s. shares up to the new peak of 42s. Broom & Wade strengthened afresh to 29s. 6d. Associated Electrical were 64s., General Electric 46s. 3d. and English Electric 52s. 9d. Crompton Parkinson 5s. shares changed hands around 14s. 4½d. "ex" the scrip issue.

